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HIV/AIDS in Africa

a brief overview of the global context

Executive summary

- **HIV and AIDS have caused a global catastrophe. Around 38 million people are infected, and the human, social and economic costs are huge.** The pandemic has spawned a global response and an international pool of expertise is now emerging. However, the funding available to take advantage of increasing knowledge and growing initiatives is inadequate, and private individuals can play a helpful role on many levels.
- **The vicious circle of infection and poverty increases the spread and worsens the effects of HIV/AIDS.** The epidemic must be tackled on multiple fronts.
 - Prevention works best when its messages are conveyed in tandem with care and treatment programmes.
 - As those affected (be they infected adults or orphaned children) sink into greater poverty, so their risk of contracting or transmitting the virus increases. It is vital to address poverty and vulnerability in order to protect those at risk.
 - The epidemic is increasingly stretching medical infrastructures, which could deliver care and treatment to those infected with HIV – health management systems must be improved to maintain and expand medical infrastructure, but not at the expense of other life-threatening diseases.
 - National efforts involving local governments, local communities and those directly affected should be encouraged and supported while duplication by outsiders avoided – collaboration among donors and service providers is essential to the success of responses.
 - International and regional efforts to find solutions (treatment trials, the quest for effective protection measures) should be supported, as well as national efforts.
- It is difficult, but not impossible, to fund and implement projects in Africa. There are a number of approaches available to donors outside the region: either support local NGOs via donors and agencies already on the ground, or fund international NGOs operating in these countries.

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Introduction

The purpose of this report

This report provides detailed contextual information and analysis that is required to understand HIV/AIDS on a regional and global scale. It is aimed at donors who wish to fund projects to help those affected by HIV/AIDS in Africa. The report also examines the ensuing social needs, types of response in operation, and the results generated by such interventions.

The report is addressed to private individuals, companies, funders, and grant-makers. While it aims to help all in this spectrum, it should be recognised that parts of the report have been written for the benefit of newcomers to the subject.

Funding this complex and rapidly changing issue, at considerable geographical distance from the donor, is far from straightforward. Few foundations or private individuals are in a position to dedicate in-country resources to support their grant-making.

This overview puts the case for combating the effects of the pandemic, analyses the delivery mechanisms, and advises how donors can target their resources most effectively. It is designed to be read in conjunction with NPC's other reports:

- *Out of the shadows: HIV/AIDS in Burundi, Democratic Republic of Congo and Rwanda;*
- *Rhetoric to Action: HIV/AIDS in South Africa.*

Experienced funders can use this report as a starting point for debate and further research. This overview does not contain all the answers – but it may help to steer organisations into interesting directions, particularly at the global and regional level.

The content of this report

The report is based on research carried out through extensive meetings with organisations, researchers, policy makers, analyses of charity accounts and activities, and reading of research materials. NPC's visits to Central Africa form an integral part of the research. NPC visited many projects in the field and held meetings with experts, project workers and beneficiaries. In addition, NPC met with some of the major international agencies and donors in Europe, and consulted with various HIV experts.

Glossary

AIDS: Acquired Immunodeficiency Syndrome

ARVs: Antiretroviral drugs. A Q&A about ARVs is available separately on the NPC website.

ART: Antiretroviral treatment or therapy. See above.

AZT: Azidothymidine (chemical name), Zidovudine (generic name), Retrovir ® (brand name) – drug used as part of triple-therapy antiretroviral treatment.

CBO: Community based organisation

CD4+ T-lymphocyte: A type of white blood cell which is critical to the immune system. The normal count for a healthy person is 500-1600. A count below 200 is considered highly dangerous and is often the trigger for ARV treatment.

DRC: Democratic Republic of Congo (the French acronym is RDC)

Discordant: Refers to a sexual partnership where one party is HIV positive and the other HIV negative.

Donors: Persons or organisations choosing to make a financial contribution to a project, charity or programme – covers a wide range from grant-makers, bi-lateral country to country donors, to companies and private individuals.

FBO: Faith based organisation

HIV: Human Immunodeficiency Virus

HIV positive: A positive diagnosis occurs if antibodies for HIV (not HIV itself) are detected. HIV negative indicates that no antibodies have been detected and implies a lack of infection.

HAART: Highly Active Antiretroviral Treatment or therapy, closely monitored treatment with triple-therapy ARVs. This may also be referred to as ART.

ICHC: Integrated community based home care

Microbicide: Substance that can substantially reduce transmission of sexually transmitted infections (STIs) when applied either in the vagina or rectum.

Morbidity: Incidence of sickness/disease, diseased/sick condition.

Mortality: Death rate, death.

MTCT: Mother to Child Transmission of HIV

Nevirapine: Nevirapine (trade name Viramune) is one of a class of drugs called non-nucleoside reverse transcriptase inhibitors (NNRTIs) used in the treatment of HIV/AIDS.

NGO: Non-governmental organisation

Opportunistic Infections: Diseases that attack, and may eventually kill someone whose immune system has been weakened by AIDS.

Orphan: International convention is that an orphaned child may have lost either one or both parents.¹

Pip: Per infection prevented, a short-hand term coined in the outcome section of this report.

PMTCT: Prevention of mother to child transmission of HIV, using ARVs to reduce the risk.

STI or STD: Sexually transmitted infection or disease

TB: Tuberculosis

US\$: GBP exchange rate: US\$1.78:£1 used throughout (rate of conversion as of September 15, 2004 using www.xe.com universal currency converter).

Viral load: A measure of the density of HIV in body fluids.

VCT: Voluntary Counselling and Testing

Acronyms of NGOs, national and international organisations

AMREF	African Medical Research and Education Foundation
BTC	Belgian Technical Cooperation
DfID	Department for International Development, part of UK government responsible for overseas aid and development.
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit or German Technical Cooperation
ICRC	International Committee of the Red Cross
MSF	Médecins Sans Frontières (Doctors without Borders), a leading medical NGO
TAC	Treatment Action Campaign, lobbies for universal ARVs in South Africa.
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WHO	World Health Organisation
WTO	World Trade Organisation

Section 1: HIV/AIDS epidemic – a global and regional perspective

HIV and AIDS have caused a global catastrophe. Around 38 million people are infected, and the human, social and economic costs are huge. The pandemic has spawned a global response and an international pool of expertise is now emerging.

This section starts by explaining the basic facts of HIV/AIDS from a clinical, social and epidemiological perspective. It then explores the international response to the crisis and highlights its financial deficiencies. The report then examines the measures available to those trying to break the vicious circle of HIV/AIDS and poverty, and looks at data available from studies in a wide geographical area, indicating efficacy or otherwise.

What is HIV/AIDS?

HIV: The Human Immunodeficiency Virus destroys the immune system itself. However, an individual can live a normal healthy life while HIV positive, until the destruction is so far advanced that the immune system can no longer fight off infections. There are many different strains of the virus because it replicates and mutates at high rates.

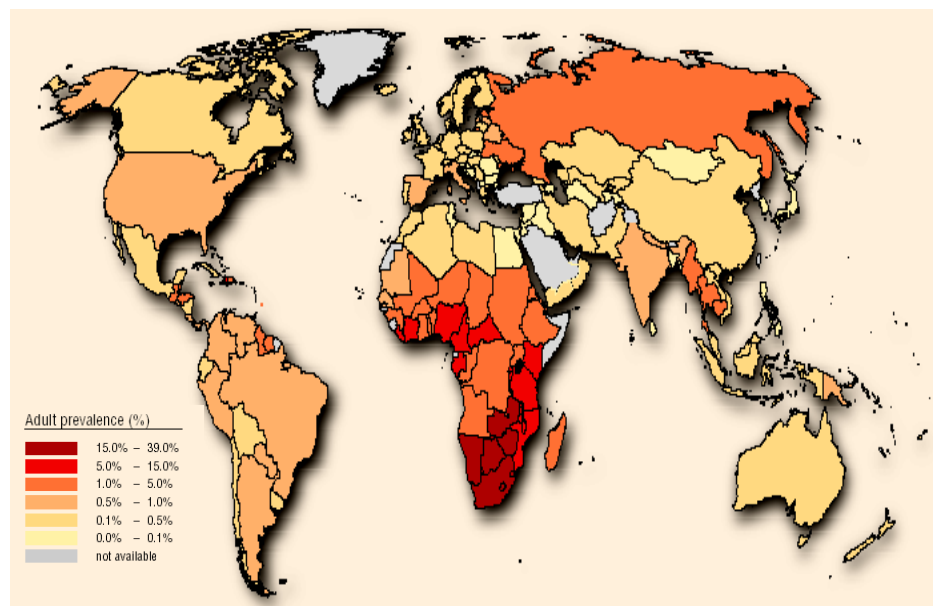
AIDS: Acquired Immunodeficiency Syndrome is diagnosed when a person's immune system has been seriously damaged by HIV and the organism is attacked by 'opportunistic infections', such as tuberculosis (TB) or common flu, against which it no longer has a sufficient defence. At this point, which happens on average ten years after infection with HIV, the individual becomes extremely sick and antiretroviral treatment is needed. In places where people's immunity is depressed and exposure to disease is high, the development of AIDS is much faster for those who are HIV positive.

Globally 38 million people are infected with HIV: three million people die of AIDS each year. 25 million of these live in sub-Saharan Africa, with 2.2 million dying.

TB and HIV go hand in hand - without ARV drug treatment, TB mortality in HIV positive patients is 100%.

Of the 38 million people infected with the virus, 25 million live in sub-Saharan Africa (equating to a prevalence of 7.5%). Of the three million people dying of AIDS each year, 2.2 million live in sub-Saharan Africa. As a global killer, TB comes a close second at two million per annum. HIV and TB co-infection rates are high: in Zambia up to 70% of TB patients are

Figure 1: Global view of HIV infection as of end 2003



Source: UNAIDS²: 38 million (range 35-42 million) living with HIV

HIV positive, conversely up to 50% of HIV positive patients develop TB. Without antiretroviral drug treatment, TB mortality in HIV positive patients is 100%. In addition, the

Women are more vulnerable to infection than men – biologically, socially and economically.

Before HIV/AIDS, Botswanan life expectancy peaked at 62. It is now 37.

Globally 14 million children have lost one or both parents to AIDS. 11 million live in Africa. By 2010 the global figure will rise to 25 million.

presence of TB puts the families of those infected at risk of contracting it. The data shown in the map in Figure 1 do not distinguish between genders, but there is a trend for increasing numbers of women becoming infected; the male population's infection incidence is not rising at the same rate. This is because women are more vulnerable to infection than men.

There are other significant causes of death on the continent and it is important not to lose sight of these when considering the HIV/AIDS epidemic. World Health Organisation (WHO) data indicate that AIDS accounts for 19% of deaths in Africa, while malaria is responsible for 10% of deaths, maternal and perinatal conditions for 7.4%, cardiovascular disease for 10%, TB and respiratory infections for 13%, and diarrhoea and childhood diseases for 13.6%. Some of these diseases may be HIV-related. Cancers are also present on the continent.

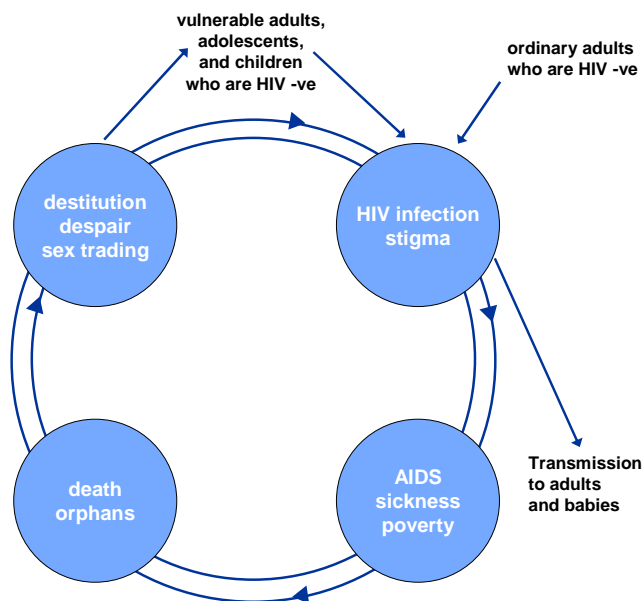
Although many people with HIV can live healthily for a reasonable period, when AIDS reaches its final stages, the symptoms are unpleasant: chronic diarrhoea, wasting, flaky skin, and sores from various infections and herpes; swallowing and digestion are often difficult because of infections. Candida (thrush) in the mouth, gut and genital areas can also be present. If TB occurs, this will contribute to the decline in health.

Effect of HIV/AIDS

HIV prevalence data are leading indicators of the scale that the AIDS pandemic will reach in coming years. There is a time lag, which may be as long as a decade, between persons being infected with HIV and developing full-blown AIDS.

A dramatic indicator of the impact of HIV/AIDS is its effect on life expectancy. To take an example, life expectancy in Botswana peaked in the late 1980s at around 62. By 2002 it had plummeted to 37. A portion of these deaths would have occurred anyway – in the absence of HIV/AIDS, TB results in death in more than 60% of cases if left untreated although the number of TB cases rises where HIV is present in a community. However, the vast majority of deaths were additional mortalities resulting from immune systems weakened by HIV, which robs victims of the ability to fight life threatening infections.

Figure 2: Cycle of poverty and HIV/AIDS



The HIV/AIDS pandemic is creating a vicious circle of infection and poverty: infection increases poverty in families and communities, poverty increases the vulnerability of those affected, and so on. One of the features of the HIV/AIDS pandemic is the children left as orphans; many may be HIV positive themselves. In 2003, 14 million children under the age of 15 had lost one or both parents to AIDS. This number is expected to exceed 25 million by 2010; eleven million are living in sub-Saharan Africa.

A recent World Bank report warns that HIV/AIDS causes significant long-term economic damage. AIDS destroys human capital directly by killing young adults and it weakens human

Southern Africa and East Africa are severely affected. North Africa is almost unscathed, and parts of West and Central Africa have continued low prevalence rates.

Heterosexual intercourse accounts for 90% of adult HIV infections in sub-Saharan Africa.

capital formation because orphans are deprived of love and guidance and spend much less time in school. The poor education of children today translates into low adult productivity a generation later.

If orphaned children are not given adequate care and education, there will be increasing inequality among the next generation of adults and the families they form. With such a sharp increase in adult mortality there may not be enough people to adopt or foster orphans, thereby shifting the onus onto the government. Governments, however, will be less able to finance orphan care because tax bases are weakened when adults are killed by AIDS. The World Bank report stresses: "Keeping infected people alive and well, especially parents, so they can continue to live productive lives and take care of the next generation, is not only the compassionate thing to do, but is also vital for a country's long-term economic future."

Women and girls are probably feeling the effects most. Not only are they more vulnerable to HIV, but the burden of care for the sick and the orphaned most frequently falls to them.

Epidemiological measurement

Obtaining reliable and consistent data on infection rates is difficult and the quality of data and method of collection varies enormously between countries. The key indicator used to measure the epidemic is prevalence, ie, the number of people infected with HIV as a proportion of the population.

However, prevalence as a measurement tool is flawed: death rates affect prevalence trends and may mask the underlying direction of an epidemic. For example, if an epidemic has reached a peak point in mortality, prevalence rates will drop as people die, even though the incidence of infection may still be as high as ever. Incidence – the measurement of additional cases of infection per unit of time – is a much better indicator, but is more difficult to measure, and few sentinel sites are actually attempting to do so.

Prevalence statistics can be more useful if information is collected about specific age groups. A reduction in prevalence in, for example, the 15-19 age range – where those infected are not yet dying – would indicate that the incidence of HIV is falling and progress is being made in combating the spread of infection.

There are various ways in which data can be collected, ranging from general population surveys (such as one carried out in South Africa) to statistics collected from ante-natal clinics. Each method has its pros and cons. General population surveys are difficult to carry out and expensive, and may miss crucial groups. Ante-natal clinic data are a good, regular source of information but only relate to women of child-bearing age and do not show what is happening to men. However, as young women are one of the groups most at risk, such data are interesting. Some countries have a paucity of sentinel sites (eg, the Democratic Republic of Congo) and wide regional variations hamper coherent analysis of epidemiological trends. This is frustrating for those trying to determine prevention strategies.

However, the prevalence data are valuable because they can be used to estimate the ranges of need (especially for treatment and care) and the number of future orphans.

Why has the epidemic spread widely in sub-Saharan Africa?

It is important to stress that there are significant regional differences in the epidemic in terms of prevalence and incidence rates and reasons why transmission occurs. Southern Africa has been severely affected, as has East Africa. North Africa is almost unscathed, and parts of West and Central Africa have continued low prevalence rates.

Heterosexual transmission

Over 90% of HIV infected adults in sub-Saharan Africa acquired HIV through heterosexual intercourse. It may be helpful, therefore, to explain some of the factors that have a bearing on sexual transmission:

- Poor health, including malnutrition, weakens the body's immune defence against the virus. Transmission of the virus from an HIV positive partner to an HIV negative partner is not automatic, particularly between healthy individuals. The virus is less likely to have an opportunity to invade cells and membranes that are well nourished, healthy and not weakened by repeated infection.³

Gender inequality is lethal: few women are able to refuse the advances of men. A campaign is required to address inequality and protect the rights of women.

Marriage for women is especially hazardous. Abstinence is not an option for wives. Condom use becomes impossible to negotiate.

- Sexually transmitted infections are the perfect vector for HIV. Ulcers, inflammation and rashes provide HIV with easy entry points during intercourse. In addition, infections reduce natural immunity to the virus.
- HIV viral load of the infected person is particularly high in the first three months after initial contraction of the virus and high levels of viral load increase the risk of transmission. The viral load then reduces for a number of years before increasing as the patient develops AIDS.
- Male circumcision may possibly be one of the factors explaining the difference in HIV rates between Western Africa, where circumcision is routinely practised and HIV prevalence is lower, and Southern Africa, where it is uncommon. Researchers are still exploring the reasons for this.
- Sexual practices (eg, use of vaginal drying agents) and/or coercion might result in abrasion or laceration of membranes which provide entry points for the virus, and consequently increase likelihood of transmission.

Box 1: Sex and the spread of the epidemic

*"We're just beginning to understand that where AIDS is concerned, gender inequality is lethal. It requires a campaign, across the continent and the world, to enshrine gender equality in the family, in the laws, in the institutions and in the apparatus of the State."*⁴

In order to implement effective prevention strategies, reduce stigma and enable people to seek treatment, or to protect themselves against the virus, one must understand the nature of sexuality in Africa, its intimate connection with self-esteem and the taboos surrounding its discussion.

In places where men have few opportunities for material satisfaction or other indicators of success, sexual encounters are an important way of demonstrating masculinity. At the same time, women are expected to submit to men (without being obviously promiscuous)⁵ and enjoy few rights of refusal, particularly if self-esteem is low.

The 'sugar-daddy' syndrome is clearly visible in some HIV prevalence statistics, and highlights the vulnerability of young women. This usually involves an older, sexually experienced man courting a much younger 'girlfriend' with gifts, groceries or cash, which she receives in return for sex. Where poverty is acute, sex is one of the few routes to a square meal.⁶ The older man, with a sexual history, is likely to be infected and may pass the virus to the younger girl. AIDS develops slowly: the risk of death from a disease that will manifest itself in the distant future seems less of a hazard than the immediate need for food. The infected participants may continue to look healthy and attractive, and move on to other partners.

Marriage represents a particular hazard for young girls, as condom use or abstinence is unlikely to be negotiable and girls generally cede economic and personal power to their partners. Even if one partner is faithful, the other may have other casual or concurrent partners, and consequently may be infected or become so, passing the infection to the spouse. Women in many countries are starting to say *"marriage is killing us"*.⁷ Unmarried women, ironically, have a greater opportunity of avoiding infection.

The use of sex-workers by men working far from their families is another well-documented hazard. Men whose lives are often arduous, for example, miners or truck drivers, feel lonely and isolated in the absence of families and seek comfort elsewhere.

Mother to child transmission

In utero infection is rare. The child is most vulnerable during birth, where transmission rates are approximately 30% unless the mother and child are treated with prophylactic antiretroviral therapy before birth. During breastfeeding there is a risk of the child becoming HIV positive because the virus can be carried in breast milk. However, it has been suggested that this risk is greatly reduced if the child is fed breast milk exclusively and weaned abruptly because the entry point of the virus is most likely to be small abrasions in the baby's stomach lining caused by poor digestion of non-breast food. Bottle feeding carries its own hazards (mainly due to the availability of clean water and the risks of diarrhoea).

Uganda deserves credit for efforts to combat HIV.

How has this been achieved?
- political commitment and leadership
- 'patriotic duty' to put HIV on personal, family and community agendas
- mortality levels shocked populations into behaviour modification

Research on this subject has not yet concluded which method has a better survival rate, but early indications are that breast feeding may be appropriate in some settings.

Uganda: a case study

Uganda is often hailed as a success story in combating HIV/AIDS. HIV prevalence dropped from 15-30% in 1992 to 4.1% in 2003 among adults aged 15-49.⁸ In a country with a population of around 26 million⁹, it is estimated that 800,000¹⁰ people died from HIV between 1982 and 2000 (3% of the population). This would account for some of the drop in prevalence. A high birth rate (3% pa) further dilutes prevalence rates. Practitioners in the field have also suggested that data may not be accurate and prevalence may be worse than reported.¹¹

However, it is clear that when compared to similar countries that have had longstanding epidemics and where prevalence rates are not dropping, Uganda deserves a great deal of credit in its success in combating HIV. Incidence, a much more important indicator, has halved in some areas (eg, Masaka).¹² In addition, younger groups have much lower prevalence than before, another good indicator of progress.

USAID has used Uganda as a case study.¹³ The conclusions are that the epidemic has been reduced through behaviour change, specifically:

- reduction in the numbers of partners – “zero grazing” – and delayed sexual debut;
- increased use of condoms by those “moving around.”

Box 2: Uganda - further ahead on the epidemiological curve

“Uganda continues to present proof that the epidemic does yield to human intervention. Recent HIV infections appear to be on the decline in several parts of the country—as shown by the steady drop in HIV prevalence among 15–19-year-old pregnant women.”¹⁴

“The horror of Slim [AIDS] is forcing people to change social habits.....in [Kampala] a young housewife with three children declared, with a gleam in her eye, ‘my husband stays at home much more. And I encourage him to do so by enthusiastically keeping him informed of the latest gossip about Slim victims.’”¹⁵

It is generally felt that the reduction in partner numbers was the most important factor in reducing prevalence rates, although condom usage probably played a role in maintaining low levels (eg, nearly 100% condom usage by commercial sex-workers in Kampala).

Behaviour change was brought about by a combination of factors (in no particular order):

- Political commitment: Early on in the epidemic the Ugandan government faced the HIV/AIDS crisis head-on, and with the help of international donors encouraged multi-faceted initiatives to tackle it. Political leaders were encouraged to discuss HIV and sex: it became a ‘patriotic duty’ to talk about HIV and to modify behaviour in order to protect the population.
- Advertising campaigns promoting ‘abstinence, faithfulness, condoms’ were clear on behavioural risks, but were humorous and appealing rather than ‘preachy’.
- The government encouraged open personal communication through social and family networks (as demonstrated publicly by President Museveni) which increased the personalisation of risk, ie, the notion that it could happen to you not just other people – that is important if behaviours are to change.
- Other initiatives were heavily decentralised: local (village) councils were involved in forming local committees to promote prevention and address stigma. Faith-based organisations also had an important role.
- Gender empowerment during President Museveni’s regime strengthened women’s rights and social standing.
- HIV education efforts in schools were mainstreamed.
- Voluntary counselling and testing (VCT) became widely available.

In addition to the interventions, it is also likely that the sheer level of mortality shocked the population into protecting themselves.¹⁶

The cost of these efforts represents excellent value for money. Total donor support for HIV/AIDS-related contributions during 1989-98 amounted to roughly \$1.80 per adult per annum over the period.

International response to the epidemic

“According to UNAIDS, developing countries need £6.6 billion (\$12 billion) by 2005 to have a fighting chance of halting the spread of AIDS. At the moment, there is only £2.6 billion (\$4.7 billion) in the pot, so a top priority for the international community is to increase the long-term funding for developing countries.”¹⁷

Many argue that the international response to date is inadequate. The required costs of an effective response vary depending on how they are measured and how realistic, universal access to antiretroviral drugs is in the face of poor health infrastructures. UNAIDS estimates that at least \$12 billion is needed annually from 2005; rising to \$20 billion by 2007. However, the amount available in 2003 was only \$4.7 billion – hardly a good indicator of intent. UNAIDS contrasts this with the estimated \$11 billion spent by the US government domestically on AIDS in 2000.¹⁸

The figures available are contradictory and are rarely presented on an annual basis. There may also be an element of double counting: low and middle income governments spent \$1 billion on HIV/AIDS domestically in 2002, but how much of this came from bilateral agreements with high income countries? UNAIDS estimates that in 2003, high income countries were projected to spend \$3.6 billion, although it is not clear how they derive this figure.

Table 1: Principal contributors to response \$ million per annum (includes TB and malaria in many cases)	2003	2004 onwards est.
Bilateral funding in 2003:		
US (will increase to US\$3bn pa from 2004/5)	580	3,000
UK (will increase to US\$890m pa from 2005)	450	900
The rest (mainly Europe, Canada, Japan, Australia)	610	600
National governments in 2002, assumed 2003 same	1,000	500
Global Fund – estimated pledged average since inception	1,000	1,000
UN agencies including UNAIDS	120	200
World Bank (commitments spread over several years) as at 2004 – US\$1.6bn	800*	1,000
WHO	850	800
Bill and Melinda Gates Foundation	200	200
Other foundations 2002	140	100
International NGOs 2002	100	100
Total identifiable funding flows	5,850	8,400

Given the complexity of Table 1, it is probably helpful to explain the roles of the principal international players in the epidemic and how they relate to each other.

UNAIDS (Joint United Nations Programme on HIV/AIDS)

This is a joint initiative between the 22 UN member governments, five major NGOs and ten co-sponsoring agencies (UNHCR, UNICEF, WFP, UNDP, UNODC, ILO, UNESCO, WHO and the World Bank).

UNAIDS sees itself as having the following roles:

- **Leadership and advocacy** for effective action on the epidemic.
- **Strategic information** to guide efforts against AIDS worldwide.
- **Tracking, monitoring and evaluation** of the epidemic and of responses to it.
- **Civil society engagement and partnership development.**

* NPC estimate given rapidity of deployment of each MAP project

\$12 billion rising to \$20 billion needed each year – but in 2003 only \$4.7 billion available. Yet US spent \$11 billion on AIDS domestically in 2000.

- **Mobilisation of resources** to support an effective response.

UNAIDS is an important source of international data on the epidemic. Its 2004 report on AIDS is a helpful document. UNAIDS also helps to develop and implement programmes, either directly or through related UN agencies. On the ground, the situation sometimes seems complicated by the fact that many UN agencies related to development and population (eg, UNFPA, UNDP) also handle some HIV/AIDS interventions directly, and indeed have mainstreamed HIV/AIDS in much of their work.

UNAIDS is currently doing interesting work in conjunction with the oil company Shell in scenario building, a tool that the private sector has found useful in determining strategy. It is expected that this will help to inform policy priorities for the global community. Early indications are that health and other development issues (social norms, civil society and governance) need to be tackled concurrently and not sidelined.

UNAIDS itself does not have a huge spending budget (\$125 million per annum), but encourages the development of programmes to target HIV/AIDS, such as the World Bank MAP programme. According to information supplied by UNAIDS, between 1996-2002 UN contributions to HIV/AIDS were much less significant than the large quantities of bilateral spending by governments.¹⁹

WHO (World Health Organisation)

The WHO's gross annual income and expenditure, is around \$1.25 billion²⁰. WHO member countries provide \$750 million of this funding. The Africa regional office receives \$250 million per annum. In addition, there are specific initiatives around HIV, TB and "communicable diseases" that account for an additional \$300 million per annum.

WHO is now committed to the '3 x 5' initiative: an ambitious plan designed to ensure that three million people are treated with antiretroviral drugs by 2005. This initiative is not the responsibility of the WHO alone, although it is spearheading it. Governments and other agencies are involved. The treatment of three million people with antiretroviral drugs is likely to cost between \$3.1-3.8 billion in 2005 if 80-90% coverage is assumed.²¹ This suggests that antiretroviral treatment costs over \$1,000 per patient per annum. In countries such as South Africa where health infrastructures are already developed, actual experience is cheaper (\$550²² per patient per annum), but given the requirement to improve many health infrastructures, these cost estimates are realistic. The WHO itself is committing \$564 million cumulatively to 2005.²³ The rest must come from other sources.

The '3 x 5' initiative has had a mixed reception. Some people think that without it, treatment would still be far too low on the agenda of countries that believe antiretroviral treatment is too difficult and where there is still widespread stigma around HIV/AIDS.

Others worry, however, that the '3 x 5' initiative is pressuring some countries, whose health problems are not limited to HIV/AIDS, to divert scarce resources away from other vital areas, such as diarrhoeal diseases, maternal mortality and malaria.

Global Fund

Kofi Annan's proposal of a Global Fund to fight AIDS, TB and Malaria was unanimously endorsed in June 2001 at the first UN General Assembly Special Session on AIDS. HIV/AIDS groups have welcomed the Global Fund as a more independent and informed grant-maker than bilateral governmental aid. The Global Fund states that "the highest priority will be given to proposals from countries and regions with the greatest need, based on highest burden of disease and the least ability to bring the required additional financial resources to address these health problems."²⁴

The Global Fund uses Country Co-ordinating Mechanisms (CCMs) to distribute its grants. The idea is to keep the central secretariat to a minimum, and devolve responsibility for application submission and management to recipient countries. Each country has put together its own CCM; in some this equates to the government's national AIDS council, while in others it is a federation of the government, an NGO, and People Living With HIV/AIDS (PLWHA) organisations. The CCMs co-ordinate the submission of programmes to the Global Fund, and approve them prior to application to the Global Fund itself and its Technical Review Panel. The Global Fund admits candidly that the efficacy of the CCMs is variable. Improving the CCM system is a priority.²⁵

WHO is committed to treating three million with ARV drugs by 2005. This is likely to cost \$3- 4 billion per annum.

But will this take scarce health resources away from other problems such as malaria, diarrhoea and maternal mortality?

Global Fund aims to give priority to areas of greatest need.

Kofi Annan originally estimated that \$10 billion per annum would be needed, but to date it looks like the actual annual spend of the Global Fund may well average out to be only \$1 billion to cover all three diseases.²⁶

World Bank – MAP

The World Bank's most significant financial contribution to the pandemic is from MAP – its Multi-Country HIV/AIDS Program for Africa. MAP was launched in 2000, and has so far provided over \$1 billion to 28 African countries. MAP1 provided \$500 million of credits and experienced heavy demand. MAP2 was launched in 2002 and was worth a further \$500 million. MAP supports programmes that are complementary to the efforts of others, and helps plug unfunded gaps, such as health system development and TB control. It is not clear to NPC whether the MAP programme will continue after MAP2.

President's Emergency Plan for AIDS Relief (PEPFAR)

The US contribution is likely to increase following President Bush's pledge in the State of the Union speech this year to increase spending on AIDS to \$15 billion in the five years 2004-8. The White House claims this will **prevent seven million new infections**, 60% of the projected 12 million new infections in the 14 target countries. It aims to provide **antiretroviral drugs for two million** HIV-infected people and **care for ten million HIV positive individuals and AIDS orphans**.²⁷

Of the \$15 billion, 55% will go into treatment, 20% into prevention, 15% into care for the dying and 10%²⁸ into protection of orphans. In practical terms, PEPFAR will direct the funds in three directions:

- \$9 billion over the period will go on new resources for 'Focus Countries'.^{*}
- \$5 billion will augment existing bilateral programmes involving USAID and the Department of Health and Human Services.
- \$1 billion will contribute to the Global Fund.

The Bush administration's budget for the 2004 fiscal year only recommends \$1.7 billion for the initiative, rather than the \$3 billion implied by the pledge and corresponding bill. More recently, the House of Representatives trimmed the overall International Aid budget; this will inevitably have a knock-on effect on the \$15 billion.

Nonetheless, these funds are a significant contribution should they materialise and if they are well directed. Large amounts of aid can be difficult to digest, however, and when the administration costs of implementation are taken into account, impact on the ground is sometimes diluted. The funds are available to NGOs, faith-based groups, public-private partnerships and governments. On the one hand, this is to be welcomed because it provides funding flexibility. On the other hand, many are worried this money may create parallel structures in environments where capacity is scarce. The role of USAID in helping to direct funds sensibly will be important.

There is concern in some quarters that the US prevention programmes over-emphasise abstinence and fidelity: they simplify some of the issues in regions where behaviour change is difficult to achieve. In addition, NPC understands that the US is unlikely to allow the funds available for antiretroviral drugs to be used to purchase generic drugs produced outside the US. This will have significant implications on how far the funds will go.²⁹

USAID has delivered \$3.2 billion of funding for HIV/AIDS since 1986, and is a partner in the delivery of the PEPFAR programme. It also has grant programmes of its own to support community responses and faith-based groups, but these are on a relatively small scale (\$50 million).³⁰

DfID – Department for International Development, UK

The UK government announced in July 2004 that it is committing £1.5 billion (\$2.67 billion)[†] to HIV/AIDS-related work between 2005 and 2008. This is a massive contribution relative to other governments in the developed world, whose contribution amounts to roughly \$608 million in 2003.³¹ The UK government has identified several strands that it will support:

^{*} Botswana, Cote d'Ivoire, Ethiopia, Kenya, Mozambique, Namibia, Nigeria, Rwanda, S Africa, Tanzania, Uganda, Zambia, Guyana, Haiti, Vietnam

[†] US\$1.78:£1 used throughout (rate of conversion as at 15th September 2004 using www.xe.com universal currency converter)

Budget shortfall: \$3 billion needed to fulfil pledge, but only \$1.7 billion available.

Danger of PEPFAR funds creating parallel structures where capacity is scarce.

US prevention programmes may be over-emphasising abstinence and fidelity where behaviour change is difficult to achieve.

UK Government committing \$2.7 billion between 2005 and 2008 is a large commitment relative to other rich countries.

- Action that prioritises women, young people and vulnerable groups;
- \$267 million of the budget to be spent on the needs of orphans and vulnerable children, particularly in Africa;
- \$140 million to the Global Fund;
- \$64 million to UNAIDS;
- \$142 million to support UNFPA.

DfID is a strong advocate of improved donor cooperation and harmonisation of efforts. It wants to see one agreed "action framework", single national AIDS authorities and monitoring and evaluation systems, and, where possible, single funding mechanisms to channel bilateral funding.

In January 2005 the UK government called for \$100 billion dollars of support for an **International Finance Facility** for HIV/AIDS. In particular, Gordon Brown (UK Chancellor of the Exchequer) wants the spending for research on a vaccine to double in order to accelerate its discovery.

Bilateral donors and technical support

A number of countries have bilateral programmes with developing countries. These programmes amounted to \$608 million of funds for HIV/AIDS in 2003, mainly from Europe, but with some contributions from Canada and Australia.³² A number of these countries also provide technical support as well as funding, including the German Technical Cooperation (GTZ) and the Belgian Technical Cooperation (BTC).

GTZ specialises in cooperating with international clients in sub-Saharan Africa. A management team of more than 20 experts at the German head office and in four regional coordination units works hand in hand with some 150 international experts and 2,000 local professionals at country level, focusing on health, rural development, education, conflict and crises.

BTC operates in 14 sub-Saharan countries. It carries out projects with partners in developing nations on behalf of the Belgian government and other donors. Assignments may be accepted from other organisations active in the development cooperation sector, such as the European Union, World Bank and the King Baudouin Foundation.

The Gates Foundation and others

The Gates Foundation's Global Health Programmes, established in 1994, have so far amounted to \$3.8 billion, of which \$1.3 billion has been dedicated to HIV, TB and reproductive health. A further \$1.5 billion has been dedicated to 'global health strategies', some of which may benefit the developing world. NPC estimates that in 2003, the Gates Foundation contributed around \$200 million to HIV/AIDS and TB initiatives³³. By the end of the first half of 2004, it seems that it has already exceeded this level, not least due to a \$50 million donation to the Global Fund to top up an earlier donation of \$100 million in 2002.

Apart from its size, the Gates Foundation is interesting because it supports international medical initiatives to develop microbicides, vaccines and other important clinical developments. Notable clinical grants since 2002 have been \$60 million for the International Partnership for Microbicides and \$83 million to the Aeras Global TB vaccination foundation. In 2001, Gates provided \$100 million over five years to fund the International AIDS Vaccine Initiative. Some of the programmes it supports demonstrate the Foundation's considerable appetite for risk, and a willingness to fund initiatives over a protracted period. It is quite possible that some of the more unusual trials and civil society initiatives benefiting from Gates funding may turn up exciting developments.

NPC estimates that other US foundations have contributed \$140 million to efforts in 2002. These include organisations such as Bristol-Myers Squibb,³⁴ the Henry J. Kaiser Family Foundation, the Ford Foundation, the Rockefeller Foundation and others.

Gates supports important research into microbicides, vaccines, and health delivery.

The sums involved are big - \$200 million to HIV and TB in 2003 alone.

Big international NGOs are not present in all countries, and their coverage and performance varies from country to country.

The official stance of the Vatican is that HIV can pass through condoms.

The Vatican refuses to accept that condoms potentially save lives.

However not all Catholics hold the same position as the Vatican.

Some parts of the Catholic Church have helped many orphans and sick people.

International NGOs and faith based organisations (FBOs)

There are a number of important NGO groups working to tackle HIV. The spending by these NGOs amounts to about \$95.5 million in 2002.³⁵ Examples of NGOs undertaking important HIV work in Africa are Medecins Sans Frontieres (MSF), Save the Children, ActionAid, African Medical Research and Education Foundation (AMREF), Catholic Agency for Overseas Development (Cafod), Christian Aid, Care International, World Vision and Oxfam. Other smaller international NGOs also contribute to efforts.

Some of their work is focused on particular country programmes, but they may also contribute to international efforts, for example, MSF's and Oxfam's advocacy work around drug access. Work may be important in developing international knowledge: AMREF's evaluation of their peer education programmes would be a case in point. Other NGOs are increasingly adopting ActionAid's "Stepping Stones" approach.

The big international NGOs are not present in all countries, and their performance can vary on a country by country basis.

It is also important to recognise the role of faith-based organisations and churches in the epidemic. Many of their activities (care of orphans, care of the infected) are valuable, particularly in the absence of other civil structures. However, in some areas, faith-based organisations or churches have contributed to stigma and negative attitudes about sexuality and have therefore hampered prevention.

The Roman Catholic Church and HIV

The official stance of the Vatican, as articulated by the president of the Vatican's Pontifical Council for the Family, Cardinal Trujillo, is that "the AIDS virus is roughly 450 times smaller than the spermatozoon. The spermatozoon can easily pass through the 'net' that is formed by the condom."³⁶ Consequently the Catholic Church officially continues its ban on condom use regardless of its potential for saving lives.

The WHO has condemned the Vatican's views, saying: "These incorrect statements about condoms and HIV are dangerous when we are facing a global pandemic, which has already killed more than 20 million people, and currently affects at least 42 million."

Not all Catholics support the Vatican on its position. Theologically, many Catholics regard the Vatican's position as tenuous, citing the principle of 'lesser of two evils' in determining whether it is better to prevent death of a living adult (through the use of condoms) or allow a future life (by eschewing contraception) despite the cost of an adult life. These Catholics recognise that abstinence may not be an option for some, nor indeed do they always believe that abstinence is desirable if couples in a now faithful marriage are discordant.³⁷

Cafod (the Catholic Agency for Overseas Development) disagrees with the Vatican and "does not support programmes that give false or misleading information about prevention (for example that HIV will inevitably pass through holes in latex or that condoms contain HIV)". It also "actively supports on-going theological reflection on the implications of prevention for HIV".³⁸

Some Catholic bishops in the developing world take a similar stance to Cafod, but not all. Unfortunately there remain large parts of the clergy who support the Vatican's position, which can undermine the prevention efforts of other NGOs.

Against this, it is generally recognised that faith-based organisations, including the Catholic Church, have done much to help the plight of orphans and vulnerable children in the epidemic. Catholic mission hospitals have often been the first groups to set up care programmes for those infected.

Medical advances and research

A number of European and US medical institutes are working hard to advance clinical prevention and treatment of the disease (of which more later); this work is taking place on a number of fronts.

Prince Leopold Institute of Tropical Medicine in Antwerp and the London School of Hygiene and Tropical Medicine (LSHTM) are undertaking numerous research initiatives into HIV/AIDS, TB and sexually transmitted infections (STIs) from both clinical and social standpoints, including randomised studies of STI treatment. They are also trying to determine how best to disseminate best practice and clinical findings to practitioners in resource-poor environments, because transferring knowledge from the first world to developing countries is frequently a challenge. The UK's **Medical Research Council (MRC)** regularly partners-up with local research institutes. In the US, the Centers for Disease Control, the University of North Carolina, and Columbia University are important research institutes.

Section 2: Responses to the HIV/AIDS pandemic

In response to the HIV/AIDS pandemic, a substantial sector has emerged. The sector operates at international and national levels to tackle the crisis from a range of angles. Much can be done to help those infected and affected by HIV/AIDS, on a large or small scale. Private philanthropists will find activities that are suitable for support. NPC would always urge collaboration between donors and agencies trying to help in order to maximise effectiveness. This section explains the main elements of the epidemic's cycle, and describes the benefits of actions taken at its different stages.

Introduction

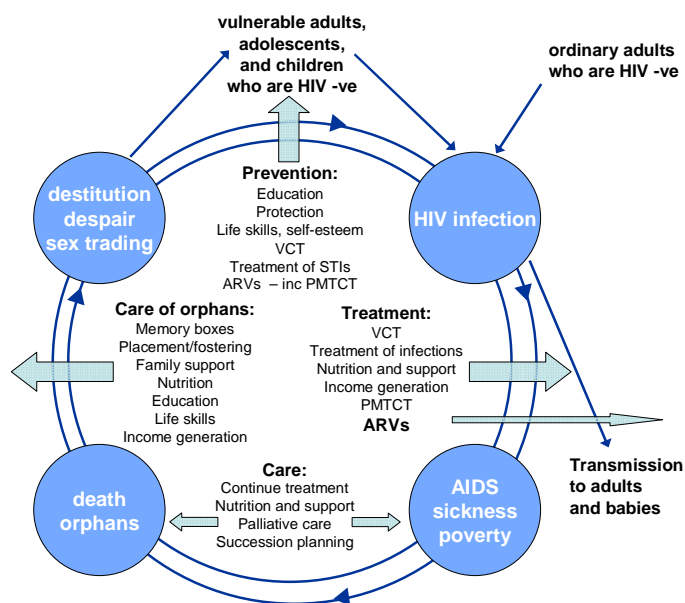
The causes of the HIV epidemic are complex, and there is no single solution. The response is complex, but broadly speaking, the war is being waged on the following multi-pronged fronts:

- prevention and education;
- people with HIV/AIDS: treatment and care;
- people affected by HIV/AIDS.³⁹

These are by no means mutually exclusive, and projects often involve two or more of these approaches. Favoured methodologies of combating HIV/AIDS are increasingly holistic.

This section will attempt to disentangle the various approaches, but because responses may be targeted at different issues and sectors of variable populations, they do not necessarily sit in neat boxes.

Figure 3: Breaking the cycle of poverty and HIV/AIDS



*VCT (voluntary counselling and testing); STI (sexually transmitted infections); PMTCT (prevention of mother to child transmission)

Breaking the cycle of infection and poverty requires a concerted effort on several fronts.

As the report stated earlier, the epidemic is cyclical and breaking the cycle requires activities on a number of fronts. Figure 3 shows a person's progression from being healthy and HIV negative (top right-hand corner) to becoming HIV positive with AIDS, and then goes on to show the effect on families and communities.

Figure 3 excludes some of the general development efforts (health care, education, infrastructure, income generation, economic improvements and capacity building) also needed to support efforts to break the cycle.

It is difficult to encourage non-risky sexual behaviour where people have no hope and low self-esteem.

All these responses should be placed in the context of the conditions found in resource-poor countries, which will also vary between areas. Below are some key themes to bear in mind when considering any intervention.

- Social drivers relating to issues, such as stigma, behaviour, attitudes to risk, religious and cultural beliefs.
- Gender, in particular attitudes to women and vulnerable groups.
- Economic conditions and consequent opportunities for income generation.
- Health systems: to what extent do they exist and what is the level of medical knowledge in the particular areas?
- Infrastructure: access to transport, water and such-like.
- Education: is the community literate?
- Population mobility: is the community in a state of flux?
- Civil society and local stakeholders: what do people actually want?

It is difficult to encourage non-risky sexual behaviour in environments where general expectations of life are extremely low. It may be necessary to consider how people's expectations can be improved, so they have incentives to adopt non-risky behaviour. Similarly, it may be tough to reduce levels of sexually transmitted infections through a mass treatment programme if a community is unstable and half its population is moving in and out of the zone being treated.

It is important that HIV/AIDS is included in measures at all levels: education, community development, national programmes, private and commercial sectors and NGO activities.⁴⁰

The state of a country's health system is fundamental to the delivery of HIV/AIDS measures. The importance of basic primary health care delivery cannot be over-emphasised: it affects not only the care and treatment of patients, but also provides an opportunity to get across AIDS prevention messages and motivates people to establish their HIV status and to change behaviour.

Where data on Central Africa's experience are absent, interesting data are often available from East Africa, an area that is further ahead on the epidemiological curve. Lessons can be learned from this region and applied to Central Africa.

Prevention

The best place to tackle any virus is at the point of infection. The effects and impact of averting infections are far-reaching. Numerous economic and social costs are avoided if infections are prevented, including the expense of treating sick people, lost earnings capacity and productivity, loss of skills and knowledge, and social ills associated with a lack of carers for children.

If a sexually active individual does not get infected then this results in protection for their partners and partner's partners and so on. For children, the avoidance of infection represents an opportunity for a healthy life. Although antiretroviral treatment is a desirable tool in tackling the effects of the epidemic, the fact remains that it is costly and as the numbers of people infected and developing full-blown AIDS increases, these demands will grow. Prevention efforts try to stem these demands by reducing the number of people infected.

The focus of prevention should be stopping the most infections for the minimum cost, and therefore a useful method of measuring results is the cost "per infection prevented" (pip), which is analogous to the cost per successful user. It should be noted, however, that as the only conclusive way of preventing infection would be a vaccine; the initiatives discussed may not prevent people from ever being infected, although they might delay infection or reduce the likelihood of future infection. Nonetheless, although these prevention initiatives do not make individuals immune to HIV, they slow the rate of infection through the population.

This section covers the prevention of mother to child transmission, blood security and needles, as well as medical advances such as vaccines and microbicides. It then goes on to the extremely complex matter of sexual transmission and the numerous attempts to reduce transmission via this route. These overlapping initiatives include treatment of sexually transmitted infections, voluntary counselling and testing, education and condom distribution.

Mother to child transmission is most likely to occur during childbirth.

The risk of transmission drops from 30% to 15% through the simple administration of Nevirapine to mother and child.

Blood security is still an issue.

Without a vaccine, Asia could face a pandemic which would dwarf Africa's.

Prevention: prevention of mother to child transmission of HIV (PMTCT)

One of the most heartbreaking forms of transmission of HIV is from mother to child. This can occur in utero, during birth and through breastfeeding.

In utero infection is rare. The child is most vulnerable during birth, where transmission rates are approximately 30%. The standard method of preventing mother-to-child transmission at birth is a dose of Nevirapine to the mother at the start of labour and then to the newborn. This halves the risk of transmission to 15% and the cost of the drug is only about \$4⁴¹. A full, highly active antiretroviral drug (HAART) regime in the final trimester of pregnancy and during labour reduces the risk of transmission to less than 1%, but requires clinical supervision similar to a normal antiretroviral drug programme.

It is a cruel irony that successful PMTCT programmes may exacerbate the orphan problem because children become more likely to survive their parents. The outcomes for mother-to-child transmission prevention interventions are rather hollow if the mother is subsequently left to sicken and die early in a child's life and if there is inadequate social care in place. On the other hand, a sick child is a greater burden to the parent while living (and the remaining family) than a healthy one. Ideally, PMTCT programmes should include family planning so that further pregnancies (and the concomitant risk of accelerating the onset of AIDS and the problem of future orphans) are avoided.

The total cost of administering PMTCT varies according to whether the infrastructure to deliver the drugs already exists. There are debates over the probabilities of transmission with and without Nevirapine, and studies show a range of costs per infection prevented (pip), from \$21 to \$327⁴². The provision of highly active antiretroviral therapy (HAART) for the necessary period would cost roughly \$250⁴³. The pip cost is therefore just over \$862⁴⁴.

The role of breastfeeding in the transmission of the virus is not fully understood. It may be that exclusive breastfeeding carries a sufficiently low risk of transmission, making it preferable to formula milk mixed in less than sterile conditions. A six-month formula regime costs \$72 per family, unaffordable for parts of the population. If transmission risks through breastfeeding are assumed to be 10%⁴⁵, then this implies a pip cost of \$720 (one South African study estimates costs as high as \$6,680 pip). Formula milk may also create stigma for the family⁴⁶. Scientists are currently researching the effect of antiretrovirals on transmission through breast milk.

Prevention: blood security, needles

Blood security is important in preventing transmission of the virus within hospitals and the health system. There are data that emphasise its cost effectiveness: \$40-246 pip⁴⁷. In many sub-Saharan countries blood security remains an unresolved issue. Intravenous drug use is not yet a reported problem in sub-Saharan Africa, except for on the east coast of Kenya and Tanzania where it may become a problem. However, transmission of the virus through poor needle sterilisation (in immunisation for instance) has been reported sporadically and good practice is important in any public health programme.

Medical advances in prevention: vaccines and microbicides

Vaccines

The holy grail of AIDS research is a vaccine that would enable the immune system to eradicate HIV as soon as infection occurs. Michael Gottlieb, the man who first identified AIDS in 1981, predicts that "by the year 2010, several of the most promising HIV vaccine candidates could be under study in controlled clinical trials . . . by 2021, one or more of these could have reached a level of effectiveness and safety that would allow its administration".⁴⁸ This is a long way off. If HIV continues to spread at the rate epidemiologists predict, then long before a vaccine is ready, Asia may be facing a pandemic which dwarfs that currently underway in Africa.

There are currently 30 candidate vaccines being tested in small-scale trials. The **International AIDS Vaccine Initiative (IAVI)** is calling for \$1.3 billion to be spent annually, but in 2003 funding was only \$650 million per annum, less than 1% of total spending on all health products. The private sector has little incentive to contribute to efforts: only 15% comes from this source, 67% comes from governments (mainly the US), and the rest from philanthropists. The Gates Foundation contributed \$100 million in 2001.

If a vaccine were developed, the benefits would be huge and would accrue long into the future.

Microbicides

Microbicides (contained in vaginal gels or similar product) are an alternative method of prevention to vaccines and condoms, and would give women more control over their own protection. As discussed later, giving women greater power to protect themselves has enormous potential in slowing the spread of the virus. There is no microbicide of proven efficacy yet.

The Gates Foundation committed \$60 million to the **International Partnership for Microbicides (IPM)** in 2003. IPM was formed out of the Microbicide Initiative funded by the Rockefeller Foundation in 2000 and supports and coordinates international efforts, helps with advocacy and regulatory affairs, and also stimulates forward thinking around the distribution of microbicides. In 2000, research undertaken by the London School of Hygiene and Tropical Medicine concluded that 2.5 million infections could be averted in a three year period⁴⁹, and 27% – nearly 700,000 – of these would be in sub-Saharan Africa.⁵⁰

Development of effective microbicides will probably cost \$1 billion. The Medical Research Council in South Africa is predicting their commercial availability as early as 2008 (although they will be only 50% effective⁵¹). However, it is estimated that the \$1 billion cost would save \$3.7 billion in healthcare – excluding the expense of antiretroviral drugs. Therefore, the raw economics are extremely attractive, let alone the profound humanitarian and social benefits. If one assumes that antiretroviral treatment costs \$500 per patient per annum, then microbicides would save \$12.5 billion over a ten year period.

There are a number of organisations conducting clinical trials, including the Medical Research Council (MRC) in the UK. The MRC is a partner within the Microbicides Development Programme which is heavily supported by DfID to the tune of £16 million (\$29 million) over five years and which has seven pilot trial sites in Africa.

Prevention: behaviour change relating to sexual transmission – education etc.

“The mainstay of prevention programmes involves changing behaviour, improving access to condoms and decreased [clinical] vulnerability of HIV. Extensive research has shown that all prevention strategies need to take into consideration and address: poverty, discrimination, gender inequality, unemployment, illiteracy and cultural practices, all of which enhance vulnerability to HIV infection”.⁵²

Prevention strategies, including behaviour change, are difficult to analyse. Conservative and religious groups debate them fiercely, wanting to pursue strategies around morality. Others want pragmatic solutions. NPC believes there is too much polarisation around these issues and that there is no “one size fits all” – a range of approaches to suit circumstances is best.

Factors driving the heterosexual epidemic

It is helpful to explain the factors that drive the HIV epidemic and to place them into social context. Such drivers have implications for prevention strategies.⁵³

Frequency of sexual contact: The estimated rate of HIV infection per sex act between discordant couples is surprisingly low. Between an HIV positive man and an HIV negative woman there is a 2% risk of infection, but only 1% when the woman is positive and the man negative.⁵⁴ Of course, other conditions, such as the presence of sexually transmitted diseases, affect this rate. Regular intercourse raises the probability of infection, which is why there is high risk of transmission between discordant couples in steady partnerships. A discordant couple having unprotected sex every day for a year has a 99% chance of viral transmission. This likelihood drops markedly if contact is sporadic.

Levels of prevalence affect the risk of transmission: in areas of lower prevalence, occasional casual sex with different partners may, ironically, be safer than regular sex with long term partners where one of them is HIV positive. In areas of higher prevalence, casual sex is hazardous, and this is clearly a high risk behaviour that prevention strategists need to target. However, in areas of high prevalence, the riskiest relationship is a steady/regular long term concurrent sexual one, an issue increasingly raised by those working in prevention.

Men generally control economic assets, and women may need permission from their husbands for the most mundane activities.

With no control of their lives and bodies, women are vulnerable.

Politically and economically displaced populations are very vulnerable.

The vulnerability of the young is showing in alarming statistics.

Concurrent sexual relationships (where someone is having sex with more than one partner) are common in sub-Saharan Africa and have particular consequences. If one person in a sexual network becomes infected, the mathematical likelihood of transmission to other members is high⁵⁵. Prevention messages must address this. In Uganda, the president and national awareness campaigns focused on “zero grazing” (the promotion of faithfulness), which helped reduce the prevalence of HIV/AIDS.

Gender and income access is another important driver. One of the key difficulties for women is that they rarely control economic assets, such as land. They are frequently dependent upon men, either within marriage or in other sexual arrangements. Women may be subject to a degree of control within relationships, including the most mundane activities: some women need their husband's permission to visit a doctor.⁵⁶ Until the economic and social balance of power is redistributed, it will be difficult for women to be the “agents of change” in sexual and other behaviour. At the same time, society's expectations of men (that they are experienced and knowledgeable about sex) prevent them from seeking information and guidance on what might be preferable behaviours.

The picture becomes even more difficult when one takes into consideration the small incomes for either sex in sub-Saharan Africa. People have to migrate in order to find work (removing them from their family structures), or engage in sex work in order to feed families.

Alcohol and its effect on behaviour and attitude to risk is an area of increasing concern to those in this field.

Sexual practices also affect the risk of transmission per sex act. The use of vaginal drying agents was mentioned earlier. A new hazard is anal sex. It is increasingly practised in order to avoid pregnancy. In some cases, it is mistakenly believed that anal sex is also a way to avoid infection with HIV, which is ironic, given that it is actually much riskier.

General factors affecting behaviour also include poverty, migration, political instability and low levels of education.

Population groups

It is helpful to segment the population into different groups:

High risk groups might transmit the virus to members of the wider population so are an important segment. This is particularly relevant when prevalence is not high but “hot spots” of high prevalence exist, which might affect the wider population in due course. Messages of abstinence and fidelity may not be relevant to high risk groups, such as commercial sex-workers, but it may be possible to get them to use condoms regularly (as was the case with the sex-workers in Kampala, referred to earlier). This avoids spreading the epidemic to other segments of the population.

People working far from home (for example, truckers, miners, and the military) are often at higher risk of contracting the virus and bringing it back. Experts are paying increasing attention to people who are internally or externally displaced, particularly in refugee camps. Men who have sex with men are vulnerable to the virus, and may infect their wives.

The age of sexual debut has an important bearing on the development of epidemics. If one examines the prevalence data in terms of age groups, there is often a window of opportunity to protect the young generation from infection. However, incidence rates among young people are alarming. The later the sexual debut of young people, the greater the chance of avoiding infection. Young girls may enter sexual partnerships with older men, in circumstances where their ability to negotiate safe sex is limited. It is necessary to support programmes involving older men to change their behaviour towards, and treatment of, younger girls. Abstinence and fidelity messages will not have high take-up if they are directed at the young women alone.

Spouses, especially women are now recognised as a group with its own risks. As noted earlier, a steady relationship does not provide security. It is extremely difficult to persuade married couples, or those in long term relationships, to use condoms habitually, and may not be appropriate to do so. Using condoms can be inconvenient within the marital home, and marriage assumes trust (justified or otherwise) between the parties. The ‘institutionalisation of mistrust’ through habitual condom usage is not seen as palatable. In addition, procreation is often desired, preventing condom use.

It is preferable, epidemiologically, to persuade married people to remain faithful. As discussed earlier, the concurrent sexual partnerships commonly found in Africa are

important viral vectors and if these networks can be broken, then the virus is less likely to spread. President Museveni recognised this in Uganda, and also that men were likely to be the prime agents behind concurrent sexual partnerships.

If a couple is already discordant (one of the partners HIV positive, one negative), subsequent fidelity can be considered irrelevant. Young women who marry older, sexually experienced men are often at risk. Voluntary counselling and testing is a vital component of any strategy as this will identify whether couples are discordant. If one partner is HIV positive, then condoms are the best solution. If the HIV positive partner is on an antiretroviral programme, which significantly reduces viral load, the risk of HIV transmission is lower.

Older men who are influential within their communities and are economically successful, and may also have a medical history of sexually transmitted diseases and HIV infection, often have relationships with much younger women and infect them. On the other hand, they can also be agents of change if they publicly support less risky behaviours (President Museveni) or try to protect young women from sexual violence (Chief Makoni in Zimbabwe).

Interventions addressing these factors and populations groups

Box 3: ABC – Abstinence, Being faithful, using Condoms

The traditional prevention methodology is based around “ABC”, which stands for Abstinence, Being faithful, using Condoms. PEPFAR favours this methodology, and emphasises the first two aspects.

However, ABC only works in some circumstances. It is a controversial approach – some experienced HIV/AIDS practitioners are concerned that ABC does not address issues such as gender and income access seriously enough, which reduces its efficacy⁵⁷. It is more difficult to achieve good results from prevention strategies if the social and moral values of a community are not well understood.

However, the application of ABC often involves attempts to change behaviour, which is useful when used alongside other strategies.

Education and behaviour change

In any intervention, the complex cultural issues of the target population need to be well understood, and the agents of change identified. Are they local leaders, clerics, traditional healers, initiators, media, peer groups, family or social networks? How are gender issues addressed? How can the next generation be protected, particularly if not all of it is attending school? It is necessary to engage both sexes in behaviour modification: targeting men (and boys who will become men) is important in breaking the cycle of gender inequality in sexual relations.

Interventions that do not attempt to understand these subtleties are doomed to failure. Experts also argue that risky sexual behaviour does not necessarily stem from an ignorance of biological facts but rather a failure to “internalise” risk, in other words, to understand the implications of such behaviour and to appreciate that it affects oneself, not just everyone else. This too has implications for behaviour change strategies.

National campaigns: It is difficult to measure the efficacy of national media campaigns, but they are important. Where television is widespread, soap operas can cover a wide range of HIV issues. In poorer areas where people only have access to radio, advertisements and radio soap operas are similarly helpful. Billboard campaigns are widely used, although the population needs to be literate. In South Africa, a sophisticated branding strategy (LoveLife) directed at youth is still being evaluated, but in the townships there are already indications of success. Even if it is difficult to quantify the direct effect of national campaigns on behaviour change, it makes life simpler for those carrying out specific programmes: they find it easier to discuss sensitive issues, and find themselves pushing ‘at an open door’.

There appear to be no statistics determining the pip cost of national campaigns, despite data relating to general awareness after individual campaigns, which may be a useful indicator.⁵⁸

Community education: There have been intensive efforts to change attitudes within communities, particularly towards gender. One such example is Stepping Stones, an initiative promoted by ActionAid. It develops a sense of responsibility to partners within relationships through group discussion, workshops and other participatory tools.

Could young men, as well as women, be the ‘agents of change’ in breaking the cycle of gender inequality?

Availability of condoms and sympathetic health services an important component of peer education programmes.

Education in schools and early education: Schools must teach children biological facts about AIDS and its prevention. Schools can help to repeatedly reinforce messages. Education has a role to play in teaching children how to care for those with AIDS, and teachers are often vital supporters of children who are bereaved or caring for a sick parent. HIV/AIDS education needs to target younger children, particularly as they may be in contact with AIDS patients; they are also at risk from sexual abuse. Gender issues, specifically the right and ability of girls and women to 'say no' or negotiate safe sex need to be addressed early.

Peer education among adolescents: Peer education projects are a promising way of changing behaviour, and have been well-received in a number of areas. In South Africa the cost per user of youth education programmes is \$15-30. Reliable data on the pip cost of peer education programmes are not yet available, and so far there is no hard evidence that incidence rates have changed. However, projects are still in their early days and it is likely it will take more than five years to see benefits.⁵⁹ Besides, educating people about HIV prevention gives them a better chance of protecting themselves.

Because sexual abstinence may not be realistic, the success of an education programme will be flawed if children and teenagers cannot get hold of condoms. They also need to receive treatment for sexually transmitted diseases, voluntary counselling and testing for HIV, and be encouraged to disclose their HIV status. HIV positive people must be supported and protected from stigmatisation.

Box 4: MEMA kwa Vijana:^{*} Randomised controlled trial of an adolescent sexual health programme in rural Mwanza, Tanzania⁶⁰

A group of nearly 10,000 adolescents was recruited from 20 trial communities and divided equally between those who received intervention and a control group. Intervention occurred in four major ways:

- in-school sexual and reproductive health education, provided by a mixture of teachers, health workers and 2,000 peer educators
- youth-friendly reproductive health services
- community-based condom promotion and distribution
- community activities.

The project measured HIV incidence, genital herpes, STIs and pregnancy. It also assessed reported knowledge, attitudes and sexual behaviours.

The reported knowledge, attitudes and sexual behaviour outcomes were encouraging, and showed that there is much value in this project.

However, the biological outcomes were inconclusive and showed no clear decrease in HIV infection rates. There may be a number of reasons for this: because the overall incidence rates were numerically low (only 45) it is difficult to draw statistical conclusions from the sample. It is hard to state categorically that the control communities had no interventions – the testing alone would have had an effect. Also, three years is a short time in which to measure results – probably too soon, particularly from the highest risk age groups that would have benefited from only one year of intervention (40% of the group).

It will be interesting to see the results of future biological testing if the interventions are continued. The main conclusion to be drawn is that behaviour change may not happen quickly, and that the effects of behaviour change may take a number of years to be visible.

The Tanzanian government started this research project in the late 1990s. It was supported by the EC, DfID, Irish government, MRC and UNAIDS. Since implementation, AMREF has been the implementer with the government, with collaboration from the LSHTM. The full project cost \$880,000 and was conducted between 1999 and 2002; the evaluation was published in July 2003.

^{*} "Good things for young people" in Swahili

The cost per infection prevented of a programme giving Kenyan sex-workers access to condoms and treatment for STIs was inexpensive at \$12-18 pip

In East Africa, VCT programmes avert one case of HIV infection for every 10 people accessing them.

Management of STIs among Kinshasa sex-workers reduced HIV prevalence from 35% in 1988 to 12% in 2002.

Condoms

To be effective, condoms need to be used in a high proportion of sex acts. It is easier to persuade people to use condoms in casual sexual relationships than in long term ones, because using them can be seen as a sign of promiscuity, or lack of trust.⁶¹ Getting condoms to those who have casual or commercial sex is a useful way of preventing the spread of HIV. Condoms are not always available in resource-poor environments, and are unlikely to be used where procreation is desired.

There are few recent or satisfactory statistics on the cost-effectiveness of male condom distribution. However, a study of Kenyan sex-workers with access to male condoms and treatment for sexually transmitted diseases showed this scheme was extremely cost effective at \$12-18 pip.⁶² It is difficult to determine how consistently they are used in the long term, and to what extent other factors in a distribution programme (eg, general health education and treatment for sexually transmitted diseases) might affect transmission rates.

In Kenya, a study on female condom distribution showed a range of costs depending on whether the target group was sex workers (\$290 pip) or medium risk women (\$2,300 pip).⁶³ This wide range reflects the number of occasions a woman is exposed to the virus and, therefore, the probability of being infected.

In populations where prevalence is low and most noticeably present in high risk groups (eg commercial sex workers, truck drivers), targeting that particular group is a cost effective containment measure, but education and general health must also be provided. Results are better if condoms can be obtained from user-friendly sources. It is important to note that while these figures show condoms have a low pip cost, condom promotion may not work in all circumstances.

Voluntary counselling and testing (VCT)

Most medical initiatives directed at AIDS include voluntary counselling and testing (VCT). Early detection of HIV improves medical and psycho-social support for individuals. There is also the added benefit that counselling persuades individuals to disclose their HIV status.

In 35 recent studies significant reductions in risky behaviour were noted among individuals who tested positive.⁶⁴ It is estimated that in East Africa, VCT programmes avert one case of HIV infection for every 10 people accessing them.⁶⁵ Individuals testing negative are given a reason to modify behaviour and protect themselves.

VCT is rarely successful when offered in isolation but is valuable as a component of a programme addressing issues of care, socio-economic needs and stigma. The availability of PMTCT (described below) is a powerful incentive for pregnant mothers to be tested. VCT needs to be offered continuously: it should not be a one-off test, but should be taken at regular intervals to reconfirm negative status and reinforce beneficial behaviours.

Evidence from Tanzania and Kenya in 2000 shows a pip cost of around \$460.⁶⁶ VCT has a low hit rate in terms of infections prevented but it costs just \$22-27 for each user. It also provides a good opportunity for counsellors to advise HIV positive people on healthy living and nutrition.

Prevention: treatment of sexually transmitted infections ("STIs")

Transmission of HIV during sex is not automatic, particularly between healthy individuals. Sexually transmitted infections increase the risk of HIV transmission although it is difficult to accurately measure the difference in probability because of "co-factors". In the absence of STIs, the probability of transmission of HIV from male to female is 2% per sexual contact. In the presence of STIs, including ulcers, this probability increases to 6%, according to one study.⁶⁷ Although this implies a threefold increase in risk per sexual contact, because of other correlating factors (eg, behaviour) within the test group the actual increase in risk per sexual contact is more likely to be tenfold.⁶⁸ STIs are widespread in Africa and accompany risky sexual activity.

It makes clinical sense, therefore, to try to tackle STIs, particularly genital ulcers and herpes simplex. A comparison of three studies in Tanzania and Uganda⁶⁹ finds the treatment of STIs is most likely to have greatest impact on HIV incidence among populations of highly sexually active individuals. As the epidemic progresses, more HIV infections occur in stable relationships with lower STI prevalence, so although the treatment of STIs remains useful, its impact is less significant.

Male circumcision correlates with lower HIV, but it is not clear whether social or clinical factors inhibit the spread.

Stigma has contributed to the spread of HIV and has marginalised those infected and affected. Addressing stigma is vital to the success of programmes.

A clinic for sex-workers in Kinshasa set up in 1988 demonstrated that long term, consistent management of STIs among a high risk group significantly reduces HIV prevalence. In this case the rate fell from 35% in 1988 to 12.4% in 2002.⁷⁰

A 1997 study of STI control programmes in Tanzania showed costs of \$200 pip.⁷¹ A Kenyan study even estimated that a combined STI treatment and condom distribution programme for sex workers in Kenya cost only \$15 pip.⁷² It is unclear whether such incredible cost-effectiveness can be replicated today when prevalence is more widespread. However, STI treatment is undoubtedly useful and initiatives that have a medical component should emphasise the importance of managing them.

Male circumcision

There is currently a great deal of debate as to whether male circumcision can reduce the spread of HIV. An observation of prevalence rates in populations that practise circumcision versus those that do not suggests a correlation. However, while there is some clinical explanation as to why this may be the case, it is not conclusive. There may also be social or behavioural co-factors inhibiting the spread of HIV.

Many social scientists do not favour the introduction of circumcision. They fear that it may be seen as a failsafe protection measure, which would counteract efforts to introduce behaviour change. They are also concerned that circumcision has its own hazards – unsterilised tools, for instance.

General comments

Programmes of prevention have the qualitative benefit of introducing the possibility of risk reduction to individuals and this empowers them to make choices. Each time an infection is averted; future infections from the would-be carrier are also avoided.

It is important to note that prevention initiatives, particularly those relating to behaviour change, work best when conducted in an environment where care (be it medical, psychosocial or economic) is available for people with AIDS and where communities address issues of stigma. Any prevention campaign undertaken in isolation is unlikely to be successful.

People with HIV/AIDS

The better the care of people with HIV and AIDS, the longer they live and the higher their quality of life. The patient requires less attention from their children or parent, and may even be able to remain in employment. Children of people with AIDS who are well-cared for can continue their education.

Organisations must address stigma: people with AIDS are often thrown out of homes and communities. If they support patients and educate communities, this will reduce stigma and exclusion.

Nutrition, treatment of opportunistic infections and basic palliative care methods extend quality and length of life. Antiretroviral drugs go a step further and, in most cases, achieve substantial increases in longevity and allow people to lead near normal lives. Nutrition, good health care and access to palliative care are still appropriate even after starting medication.

Antiretroviral drugs

Antiretroviral drug treatment (sometimes referred to as therapy) uses a combination of drugs to inhibit the replication of HIV and boosts the patient's immune system. Antiretroviral treatment does not cure the condition, but it does bring substantial clinical benefits to the patient. An antiretroviral drug regime involves taking three drugs twice a day, and once started it must be adhered to rigidly: non-adherence reduces the benefits and increases the likelihood of drug resistant virus strains developing. Furthermore, a degree of clinical sophistication is needed to determine the drug regime for each individual. Antiretroviral treatment is complex, and this section is only a brief overview, the Appendix explains it in more detail.

Antiretroviral treatment is generally applied at Stage 4 of the disease's progression, the final stage of HIV/AIDS when a person's 'CD4' count drops to below 200 (although it can drop to this level in earlier stages). At this stage, substantial increases in 'viral load' (the presence of

The introduction of antiretroviral drugs in Europe and the US has helped cut AIDS deaths by 70% in the last six years. AIDS mortality in Brazil fell by 51% when treatment became universal.

the virus in the blood) are usually observed, which also increases infectivity. Some practitioners start treatment earlier than Stage 4 to avoid problems associated with tuberculosis.

Antiretroviral drugs have been described as having a "Lazarus effect" in bringing AIDS sufferers back to life, although some patients develop resistance to the drugs and others (about 6%) have such extreme side effects that the regime is suspended. Over the last six years, however, the introduction of antiretrovirals in Europe and the US has helped cut AIDS deaths by over 70%. In Brazil, AIDS mortality fell by 51% between 1996 and 1999, when antiretroviral treatment became universal. The development of resistant strains, however, is gradually reducing the effectiveness of antiretroviral drug programmes in some countries. The problem of 'treatment anarchy' leading to the development of resistant strains emphasises the need for coherence and co-operation. Private providers of antiretroviral drugs using incorrect protocols are a particular risk. In Central Africa the extent of resistant strains is not yet known, and whether indeed strains will emerge under treatment programmes.

A big issue relating to antiretroviral drugs is their cost, which used to be prohibitive, but fortunately now is falling. The cheapest brand-name drugs cost \$562 per patient per annum in the developing world. In the UK the price is much higher. However, generic drugs, manufactured in countries such as Brazil and India, are available to the developing world at much cheaper prices. The Clinton Foundation's HIV/AIDS Initiative secured a deal in 2003 with generic drug makers Ranbaxy Laboratories, Cipla, Matrix Laboratories, Hetero Drugs and Aspen Pharmacare to reduce the cost of commonly used three-drug antiretroviral regimens to \$139 per patient per annum. In April 2004 the Clinton Foundation brokered a deal between UNICEF, the World Bank and the Global Fund to Fight AIDS, Tuberculosis and Malaria to extend the scheme to more than 100 developing countries.⁷³

In practice, export costs tend to push the prices up. In addition, the drugs are mainly only available to purchasers of scale, governments for instance, at these prices. Smaller antiretroviral deliverers cannot access these prices. It is also important to include the price of laboratory testing and medical infrastructure when considering the cost of antiretroviral drug delivery. Some developing countries, such as Kenya (who have licensed production from GlaxoSmithKline), are starting to develop their own generic drug manufacturing capacity under licence, which would drive prices down further (from \$552 per patient per annum to \$396) and benefit the local economy.⁷⁴ If, as planned, the government treats 180,000 patients, this would save Kenya \$28 million.

Box 5: TRIPS and generic drugs^{75 76}

The rules governing pharmaceutical patent protection are enshrined in the Trade-Related Aspects of Intellectual Property Rights Agreement (TRIPS) of the World Trade Organisation (WTO). It attempts to safeguard access to medicines in poor countries in the face of patent protection. It allows for developing countries to adopt compulsory licensing for the production or importation of generic medicines without the consent of the patent holder, in order to protect public health.

This agreement was reached after much political wrangling at the WTO Ministerial Conference in Doha in November 2001, followed by further negotiations up to August 2003 when the conditions, in particular allowance for importation of generic drugs by countries who had no production capacity, were finally announced. Some of the language in the agreement is open to interpretation, and the implementation of the agreement does not always achieve its goals.⁷⁷

In particular, TRIPS and the spirit of the agreement can be overridden by Free Trade Agreements between countries. The problem here is that the poorer countries who are supposed to benefit from the TRIPS arrangements find themselves in weak negotiating positions with wealthy countries which have strong pharmaceutical industry lobbies. There have been a number of examples of restrictions being negotiated between countries, such as the US, with various African, Central American and East Asian countries which are inconsistent with TRIPS.

Manufacturers of generic drugs in countries such as India cannot automatically export their products to poor countries and must wait to be asked. Currently India is not part of TRIPS (it passed a law in the 1970s exempting it from international patent law) but when it accedes in 2005, Indian drugs will be much less available.

Availability of cheap generic antiretroviral drugs in developing countries is at risk from bi-lateral trade agreements between India and US.

\$1,000 per annum is the realistic all-in cost of supplying antiretroviral drugs using inexpensive generic drugs. Delivery, infrastructure and clinical management costs account for nearly half of this figure.

Brazil saved \$850 per annum per patient on hospital costs

There is insufficient infrastructure in many countries to introduce widespread antiretroviral drugs effectively at the current time

One figure often quoted is that the total cost of antiretroviral treatment is over \$1,000 per patient per annum.⁷⁸ This includes drugs, medical infrastructure and laboratory testing. In countries such as South Africa where health infrastructures are already developed, actual experience is cheaper (\$550⁷⁹ per patient per annum), but given the requirement to improve many health infrastructures, \$1,000 per annum seems realistic.

The net cost to society is significantly less than this, because people receiving antiretroviral drugs will make less use of hospitals than untreated AIDS patients. Brazil found that it saved around \$850 in hospital costs per patient per annum during the first four years of its universal antiretroviral drug programme.⁸⁰

The impact of antiretroviral drugs on a family is transformational. Children are not orphaned and are relieved of the burden of caring for their parent, allowing them to attend school (antiretroviral drug provision to one mother of four not only impacts her life, but four others as well). Mothers do not spend their days having to care for sick children and can work instead. Partners are less likely to infect one another with variant HIV strains.

Similarly, the impact of an antiretroviral drug programme on a particular community is substantial, albeit at considerable cost. Communities are more likely to participate in VCT programmes if treatment is available; education and prevention opportunities are increased. Confidence of communities is improved and the future risk of delinquency among youth is greatly reduced. Therefore the long-term economic benefits are considerable. Antiretroviral treatment also reduces the viral load of patients, thereby decreasing infectivity, which is an additional benefit.

On the negative side, antiretroviral drugs have side effects such as vomiting, rashes, increased risk of cardiovascular disease, headaches and insomnia, sometimes of such severity that people drop out of the programmes. Good nutrition reduces the likelihood of poor adherence due to nausea and poor drug absorption.

The provision of antiretroviral drugs raises some practical considerations:

- **Patient selection:** Who gets priority when resources are finite? Might one create tensions within communities if some patients are treated and others not? Why should the sickest be favoured over healthier people? If one's objective is to delay or prevent orphaning, then mothers may be favoured over other members of society, possibly leading to unforeseen social consequences.
- **Nutrition:** Reasonable nutrition levels are a crucial component of the antiretroviral drug regime and access to income-generating activities (sometimes part of a programme) is helpful in this regard.
- **Adherence:** This is essential for the success of antiretroviral treatment and there are several methodologies to promote good adherence levels, for instance the use of lay counsellors/patient advocates.
- **Counselling and support:** This is essential to manage patient expectations and to promote adherence to the drug regime and responsible behaviour with sexual partners.
- **Support groups:** These encourage adherence and help patients and families avoid stigmatisation.⁸¹
- **Clinical supervision:** The administration of treatment is extremely labour-intensive during the initial months and the training of doctors and nurses to administer the programme is crucial. Primary health clinics and even tertiary hospitals show a poor record of administration of antibiotics to TB patients even in South Africa – this demonstrates how even a well-developed medical infrastructure has capacity limitations, so enormous capacity building would be required should the government roll out antiretroviral drugs.
- **Access to laboratory testing:** This is necessary to keep track of progress.
- **Treatment of opportunistic infections:** Access to ordinary medicines for infections and ailments, together with timely delivery of antiretroviral drugs to outlets is essential. Again, primary health clinics are frequently under-stocked with basic medicines.

There is insufficient infrastructure in many countries to introduce widespread antiretroviral drugs responsibly and effectively at the current time. In well-managed programmes the adherence of patients is extremely encouraging. However, the medical profession as a

Capacity building is essential in order to increase countries' ability to introduce widespread antiretroviral treatment.

whole in Central Africa is not experienced in antiretroviral provision and unless this capacity is developed, it is difficult to foresee how patients will be able to adhere to the most appropriate regimes. The laboratory testing of patient bloods, which is a necessary part of a treatment programme, is not available in all parts of the country. On the other hand, once capacity and programmes are developed, the clinician's life may be simplified because there is less need to treat a range of complex opportunistic infections.

In some respects the epidemic represents an opportunity to develop health systems, however, the previous experience of some practitioners in other public health crises suggest that this may be a mirage.⁸²

Box 6: An assessment of Tanzania's infrastructure⁸³

The delivery of medical care of any description is a key issue, and Tanzania is an interesting case study.

In a thinly-spread population of 34 million people growing at around 2% per annum (despite the HIV/AIDS epidemic), the availability of healthcare professionals is dropping alarmingly. There are currently around 160 "health professionals" per 100,000 of population, but over 30% of these are "attendants" with little direct medical impact. The absolute number of health professionals has dropped in the last decade, due largely to an employment freeze imposed by the IMF and World Bank in the nineties, and they are also ageing, which will lead to future personnel gaps.

At current levels there is high availability of unskilled workers in the health sector, not all of whom are useful. Doctors, on the other hand, are urgently needed: only 480 exist, but over 4,000 are required. With only 2.5 doctors per 100,000 of population, the delivery of healthcare is precarious. At present there are nearly enough nurses available, but by 2015 the study predicts that there will be a deficit of nursing resources of over 60%.

This is hardly surprising in a country where per capital expenditure on healthcare is \$6-7 per annum, and highlights a problem experienced by many resource poor countries.

There is currently an urgent need for seed funding to develop infrastructure and a training platform in anticipation of future international funding. Medical NGOs therefore play a vital role in:

- Developing models and evidence-based protocols (such as "DART" described below), which could realistically be rolled out to wider audiences.
- Building capacity within government health systems to cope with antiretroviral drugs and related health issues, particularly in the rapid training of medical and related personnel in antiretroviral therapy.
- Building capacity within health systems to cope with other health issues so that these are not ignored while all efforts are concentrated on HIV/AIDS.
- Offering stopgap services while national governments develop operational plans and mobilise funding, thereby saving lives while policy is debated and programmes are developed.
- Documentation of successful programmes and dissemination of findings.

Private funders face a dilemma over the longevity of antiretroviral drug provision. While medically possible, it is ethically questionable to cease treatment of patients with antiretroviral drugs once started (apart from treatment in connection with PMTCT efforts). It is not yet clear whether stopping treatment makes it more likely for drug resistant HIV strains to develop, medical opinion appears divided. Programmes may be started in expectation that more substantial funders will step in at a later date, but if this does not occur, private funders will have to face the possibility of continued funding or cessation of programmes. The risk of drug cessation is a sensitive issue to people who are HIV positive, and in some places there is scepticism over the sustainability of funding for treatment.

Considerable uncertainty exists about the impact of antiretroviral treatment on sexual behaviour and transmission. On the one hand, there is some evidence from the US and Europe that patients receiving antiretroviral treatment become more sexually active, engaging in unprotected sex, thereby increasing the likelihood of transmission. On the other

Funders face a dilemma over the longevity of antiretroviral drug provision. Withdrawal of treatment because of cessation of funding is undesirable.

Ideally private funders can "pump prime" provision but resources will be required to take up the costs in the long term.

Treating whole families in order to maintain sustainable family units is desirable.

Residential hospices are too expensive to be a widespread solution and are not always suited to an African lifestyle.

hand, evidence to the contrary exists and, furthermore, the viral load of someone who is receiving antiretroviral drugs declines, making them less infectious to any sexual partners.⁸⁴

Development of antiretroviral therapy (DART)

The delivery of antiretroviral drugs, even with lower drug prices, is still expensive and it is useful to look at ways to drive down costs. Practitioners traditionally monitored patient progress by regularly monitoring CD4 counts and viral loads, which are costly procedures – particularly the latter. Laboratory costs are an area that the Medical Research Council is tackling through DART, with support from DfID and the Rockefeller Foundation. In particular, they are running trials in Uganda and Zimbabwe exploring the use of *clinical monitoring only* versus laboratory monitoring, the idea being that if one can reduce the need for laboratory testing, then a great deal of money can be saved. This would also be very helpful in areas where laboratory testing is not easily available – a big issue in Central Africa. NPC estimates that it costs between \$100-150 per patient per annum for full laboratory testing.⁸⁵ As viral load testing is more costly than CD4 counting it may also be interesting to explore ways of reducing the amount of viral load testing.⁸⁶

MRC is also trialling comparisons between planned treatment interruptions (which would reduce the need for drugs on a continuous basis) and continuous treatment in order to drive down drug costs and mitigate patient side effects. They are trialling this in both adult and paediatric treatment.

Antiretroviral drugs to children

This presents a terrible humanitarian dilemma. In a resource-poor environment where treatment is rationed, very young children are neither carers nor bread-winners. The preservation of children at the expense of adults can ironically increase the numbers of orphans by keeping children alive to become orphans.

In practice, antiretroviral drugs programmes increasingly favour treating whole families where possible. This reduces tensions within families: mothers are unlikely to accept their own treatment while watching the demise of a child, and a treated child is less of a burden on family economics, emotions and care logistics.

Conclusions

On balance, the benefits of providing antiretroviral drugs largely outweigh the costs and risks. There needs to be sufficient infrastructure for delivery in place – clinical supervision, patient support, counselling and education – to make an antiretroviral treatment project work well. To enjoy economies of scale and to benefit a community, rather than isolated individuals (envy can be disruptive if only a few are treated), antiretroviral drug programmes have to be of a reasonable size.

General care and support

As explained earlier, HIV patients are not generally suitable for antiretroviral treatment until the disease progresses to AIDS. In any case, antiretroviral treatment may not be available or clinically appropriate. Good prevention and management of opportunistic infections, nutrition and “healthy living” can delay the onset of late stage AIDS. Such support should be viewed as an integral part of treating any group of patients and has added cost benefit.

Furthermore, when there are insufficient resources to pay for any antiretroviral treatment, or when a person has a drug resistant HIV strain or suffers extreme side effects from the drugs, it is important to provide them with a dignified way of spending their final years. Residential hospices are too expensive to be a widespread solution and are not always suited to an African lifestyle. Community-based home care programmes can, however, be very effective in improving the quality of life for AIDS sufferers and their families and these programmes sometimes even extend life.

Nutrition and living conditions

Although it appears that there are no clinical studies comparing malnourished control groups with well-nourished patients, medical practitioners agree that nutrition is a crucial component in the treatment of AIDS.⁸⁷ Patients require increased levels of protein, vitamins, minerals and calories. Malnutrition is often a key problem for patients resulting in a vicious downward spiral of lower energy, increased sickness and reduced ability to generate income, thereby further reducing nutritional intake. Projects attempting to encourage and improve cultivation of crops in rural areas are helpful in this regard. The cost of good basic nutrition, which can

Good nutrition enormously benefits patients and costs little – around \$100 per patient per annum.

have an enormous impact and boost a patient's energy level (for work or childcare), health and sense of well-being, is around \$90-100 per annum in South Africa.

Access to clean water is an issue for people with HIV and AIDS, whether on antiretroviral treatment or not. There is no easy answer to this given that the provision of clean water, particularly in rural areas, is expensive. Care programmes should include education on water hygiene.

*General medical and palliative care**

The prevention and treatment of opportunistic infections, such as thrush (oral as well as genital), is crucial. For example, patients suffering from oral thrush are often unable to eat.⁸⁸ TB and forms of the herpes virus also commonly afflict AIDS patients in debilitating and painful ways. Diarrhoea is a regular problem, and untreated diarrhoeal infections further exacerbate nutrition difficulties and accelerate the progress of AIDS.

The challenge in many resource-poor environments is the lack of qualified medical practitioners and health workers. HIV/AIDS is not the only disease affecting the poor, and it is important that the general health of all people in a community is maintained. There are concerns that if too much attention is placed on HIV/AIDS, vital resources will be diverted away from other medical conditions.

Palliative care is important because it is not only humane, but gives patients dignity and provides families with support and sense of value: its benefits are discussed in more detail below. However not all countries have developed models as good as the integrated community based home care one developed in South Africa. Some countries may have slightly different systems, which afford some degree of care, but many countries have no such care models.

Integrated community based home care (ICHC)

In South Africa, hospices have developed an integrated community based home care model. This links hospices, primary health care clinics and hospitals as well as caregivers in developing a care plan for patients, and training health professionals and volunteers. Caregivers work in teams with nursing and medical supervision, social workers and bereavement counsellors who then go into the community to train and support carers of AIDS patients (generally family members) in the home in basic nursing skills.

This model of care also provides psycho-social and spiritual support to patients and the bereaved. There is anecdotal evidence that the psychological well-being of patients has a bearing on longevity and quality of life, helping to combat the isolation and depression frequently associated with AIDS. Such a measure also reduces the trauma for children watching the passage of life of a loved one through sickness to death, and reduces the feelings of helplessness among family members.

Bereavement support is part of this process. Interventions are crucial if the child is to recover sufficiently to control its own life (for example, saying no to sex), make the best of education, and eventually become an independent adult. Memory Boxes or Memory Books are now being used to help this process (see box 7).

Box 7: Memory boxes, bags and books

A Memory Box[†] is a measure that has been successfully deployed in South Africa and Uganda. It is created for the child by its parents or by the child itself (lovingly and beautifully hand-decorated) and might contain *documentation*: birth certificate and ID documents, a *family album* containing stories, photographs and drawings, a *family tree to help* identify relatives for future tracing, a will including intentions for the placement of child with trusted relatives and details regarding inheritance of possessions, *letters to the child* and other treasured objects.

A Memory Box project provides a conduit through which people can confront AIDS and its implications. It is a useful tool to place at the heart of the grieving process.

* "Palliative care is the active total care of patients whose disease is not responsive to curative treatment. Control of pain, of other symptoms, and of psychological, social and spiritual problems is paramount." WHO 1990

† A Memory Box can sometimes be a Memory Bag or Memory Book with a pocket in the book sleeve

Psychological well-being improves life expectancy. Without support groups, HIV positive mothers claim they would have lost the will to live. Support groups also tackle stigma and the effects of stigma.

Wherever possible, programmes should focus on keeping the remnants of families together.

The advantage of the ICHC model is that it uses caregivers who are part of the community and know the families concerned and are always on the lookout for new cases. It also provides an entrée to the family when providing other services such as bereavement counselling, help with placement planning of children, and placement once the children are orphaned. Caregivers report frequent opportunities to improve HIV/AIDS education in the immediate family and community. Funders should support the development of home based care initiatives wherever they may be found.

Support groups

The effect of psychological well-being on life expectancy should not be underestimated. Interviews with HIV positive mothers in support groups emphasise the importance of mutual support and contact – without the support groups they would have lost the will to live⁸⁹. Support groups are less expensive than one-to-one counselling, and can reduce and even replace the need for it. They are easy to establish and can be combined with self-sufficiency projects, eg, income generation or gardening.

There is enormous stigma associated with having HIV/AIDS. Even in a society where death is commonplace from other causes, few people want to associate with AIDS patients; the community at large views investing social or other energy in someone who is dying as wasted effort. People may view an HIV positive woman, for instance, as unclean, potentially polluting the men in her community. Support groups for people with AIDS, coupled with community education, can help to overcome stigma within communities and reduce isolation for AIDS sufferers.

Support groups are also important in helping to prevent HIV positive mothers abandoning their children; they often expect their children to be positive too and cannot face caring for a sick child.

People affected by HIV/AIDS

“Orphanhood is a process that starts long before the death of the child’s caregiver.”⁹⁰

The consequences of the disease badly affect many people, especially children, within the circle of a person with HIV. Children are probably worst hit, but also affected are the parents of sufferers, siblings, relatives, and the wider community who are left to pick up the pieces left behind by bereavement and trauma. It is hoped that treatment initiatives in some areas will stem the flow of bereavements, but as so small a percentage will have access, those affected will still need support. **Indeed, it is the view of some practitioners that given the emphasis on prevention and treatment, orphans and vulnerable children and their families are not receiving the resources they need. Philanthropists can be particularly helpful in this area.** This section deals with the numerous measures trying to address the issue.

For a child, the preferable outcomes after bereavement, in order, are:

- (1) **Remaining within the family** in the community in which he or she has been brought up. Assuming there is no abuse or neglect within the family; this results in the least possible trauma for children (even in a child headed household). Transfer to an unknown extended family in an unfamiliar place may not be particularly desirable and it is difficult to monitor potential abuse or neglect. Children generally fare better if kept with their siblings.
- (2) **Remaining within the community** through foster care or placement in small family homes so that children remain close to their roots. Again, trauma may be reduced if a child remains in familiar surroundings and this also encourages the community to participate in the response.
- (3) **Fostering or placement with a good family** in a new community.
- (4) **Institutionalisation.** A temporary or permanent stay in an orphanage may be unavoidable (eg, for abandoned babies, street children etc.). Institutionalisation is preferable to a life on the street, but is not ideal for child development.

Unfortunately some children slip through the net and end up on the street, in which case support for them is helpful, but difficult to provide.

The romantic ideal of the extended family is being eroded by population movements and the sheer scale of the epidemic.

HIV positive children are more likely to be abandoned.

Nutrition levels are often very poor in children whose carers are infected or dead.

Such children often drop out of school because of caring responsibilities and insufficient funds.

Aside from (4), all of the above are relatively low cost, although in countries where there are no social services, it will be the families and communities who foster the children that will bear the cost of looking after them. This presents enormous challenges.

Institutionalisation in orphanages is a less positive outcome than other solutions and is, in any case, considerably more expensive than other measures. Day care centres, where they exist, are helpful adjuncts to initiatives, providing respite for the carers and places of safety, development and nutrition for the children.

The future for children who do not receive any help is extremely bleak. It is clear that orphans left to their own devices do extremely badly and one can assume negative outcomes (including high risk of eventual HIV status) for unattended orphans. If large numbers lack benefits, then the outlook for the future social development of communities is grim: unattended children will quickly grow into disaffected adolescents and young adults who turn to crime and delinquency as a way of life.

There is a growing consensus that in order to serve children best, initiatives need to target the family caring for the child, rather than singling out the orphan for special attention.

Orphan placement, foster care and child-headed households

Proper placement is crucial to the emotional development of children. In some cases it is possible to place a child with a member of an extended family or neighbour. However, there are cases where no such adult exists: the romantic ideal of the extended family in some areas may be a myth, particularly if there have been population movements or there is high HIV/AIDS prevalence. Even if a grandmother is able to support children immediately after they are bereaved, she herself may be old or sick and lose the ability to care. Support for **child-headed households**, therefore, may be a reasonable alternative, particularly if the help is both material and emotional and includes an element of mentoring. The benefit of this is that the children are more likely to retain their family assets, and sibling groups are not broken up.

Foster care schemes to place orphans with women or couples whose children are grown up or who are unable to conceive have been developed successfully in some areas. Between four and six children may be placed, although there are schemes that place more with families. Small family homes of larger numbers of children are also seen as a solution in the absence of better alternatives.

HIV positive children are more likely to be abandoned than their negative counterparts because mothers feel unable to cope with the prospect of caring for a sick child. These children, in turn, are more difficult to foster.

Box 8: Role of faith based organisations (FBOs) in providing care across the spectrum – report by UNICEF

UNICEF researched the activities of 690 FBOs in six countries and found that they provided a broad range of community-based services, particularly material support to orphans and care for the sick. It found them to be adaptable and responsive. Although individually small, the cumulative impact of thousands of initiatives is considerable. The researchers also found that FBOs were well-organised: those lacking transparency and organisation were not supported by local communities. FBOs are able to tap into volunteer resources, although financial resources in such poor communities are often limited.

Material and practical support – nutrition, education and registration

Money is often short when people are sick (they are unable to earn a living and at the same time require expensive medication) and in the period after their death. To add to the family's burden, funeral costs are high. Consequently, in families with patients or recently dead carers, children have shocking levels of nutrition and development. Food parcels are often the only way to adequately nourish children.

Maintaining a child's education is also a challenge. Two types are relevant: minding very young children and preparing them for school, and education from primary school onwards where uniforms and school fees are the concerns. Families who have lost the main breadwinner struggle to keep children in school. Older children leave school to earn income to support other family members. Financial support and flexible learning opportunities are required here.

Children need financial support for basic food and education. They also need practical and emotional support. Registration and documentation helps to reduce risk of neglect, abuse and 'disappearance'.

Women and children are often disinherited, increasing their economic vulnerability still more.

There are large numbers of children who have no official records, and this has implications for their welfare. This puts large numbers at risk of abuse and trafficking, the worry being that they won't be missed if they disappear. In countries such as South Africa, registration of birth and death certificates has the added benefit of qualifying children for grants from the social services – but not all countries provide this.

Counselling for bereaved, care of carers

Bereavement is hard to bear, particularly after witnessing a long illness. It can sometimes be difficult to reach children who have suffered so much and lost their childhood. Self-esteem will be extremely low, and in the worst cases neighbours or relatives will abuse vulnerable children.

It is difficult to gauge how these children will mature. Many people in the field fear that they may become alienated and excluded as a result of their experiences. Some children will express this by withdrawing, others by becoming angry and aggressive. Counselling can help children adjust to such extreme circumstances, although it is difficult to quantify its success. Children's support groups in South Africa have been found to be an effective (and cheap) counselling tool.

Institutions and shelters

The problem of orphans is so large that in some communities the ideal models (placement with families) may not be achievable. If a child has nobody to look after them, the only option might be to place the child in institutional care, preferably within local communities. HIV positive children are particularly at risk of abandonment and less likely to attract fostering or adoption. Children who end up living on the street harden quickly and a street child requires intensive rehabilitation. Street children often come from disintegrating families split by poverty, which is why initiatives keeping the remnants of the family together are so important. Good shelters will take the trouble to trace communities and families as quickly as possible to try and place children back at home, but often there is nobody for them to go to.

Inheritance – widows and orphans

There is a risk that unscrupulous relatives will snatch property away from children who inherit it – the protection of property inheritance for the children, is vitally important. Widows are also at risk: in many societies, men retain the property, so if the man dies, the wife is left destitute. In addition, the practice of inheriting a dead brother's widow can introduce infection to a new family – although it might ensure her support in the short term.

Sustainability of initiatives

When helping orphans and vulnerable children it is important not to discriminate in favour of those orphaned by AIDS over those orphaned for other reasons. Such discrimination divides communities and is inequitable.

If a support group includes an income generating scheme (that is genuinely profitable) then so much the better. Self-esteem, independence and motivation are useful outcomes of such schemes as well as the importance of livelihoods in providing nutrition and access to transport. As poverty is linked to both the spread of AIDS and the problems of affected people, poverty alleviation is important. Many hospices, NGOs, and community based organisations have an income generation programme in their portfolio of activities, although not all schemes are genuinely profitable and so need to be carefully assessed.

The production of cheap food for both nutrition and income is important to many families but not all have the know-how or means to cultivate food.

On a more macro level, it is clear that the more a community can marshal its own resources to cope with the crisis, the better. Responses that include large numbers of volunteers and involve community based and grass roots organisations not only provide better cost per user results, but are also more likely to survive and take hold. Similarly, it is important that external support does not undermine community initiative and motivation and is based on community preferences.

The role of people with AIDS in all initiatives is important. As activists, educators, advocates, and advisers, people with AIDS can be powerful in driving change. NGOs also report that people with AIDS can encourage peers to change behaviour.

Regional initiatives

HIV/AIDS spreads across borders, particularly when communities are displaced through conflict. The **Great Lakes Initiative Against AIDS (GLIA)** has been formed to reduce HIV infections and to mitigate the socio-economic impact of the epidemic in the Great Lakes Region by developing regional collaboration and implementing initiatives that can add value to the efforts of each individual country.

There are six member countries – Burundi, DRC, Kenya, Rwanda, Tanzania and Uganda. GLIA is currently in discussions with MAP for funding and a full range of implementing partners (UNAIDS, UNHCR, IRC) to develop surveillance and sentinel sites (both behavioural and, where possible, biological) in nine to ten refugee camps scattered around the region. Although there are VCT services in some of the refugee camps, the implications of the data are not being considered at a regional level and the policy implications not yet being fully explored.

Section 3: Outcomes from responses

The resources available to tackle HIV/AIDS fall far short of the need. It is therefore desirable that private giving is targeted at initiatives that have demonstrably effective outcomes. It is difficult to spend money without doing some good. However, unlike governments, which may choose initiatives that are politically uncontroversial and popular, donors have the freedom to focus on the measures that are most effective.

Introduction

The outcomes available from the different responses discussed earlier are:

- *Preventing* HIV from spreading to adults or children;
- *Treating* those with HIV/AIDS to extend their life;
- *Caring* for those dying of AIDS to improve the quality of their final years and support families trying to cope
- *Protecting* orphans and children who are at risk of losing their caregiver to AIDS.

Some strategies will have outcomes fitting a number of these categories, some will fit just one. When assessing outcomes it is often useful to distinguish between the cost per user and the cost per successful user. All charitable activities are targeted towards achieving positive outcomes. However, some are more successful than others. An initiative that succeeds in only 10% of cases has a cost per successful user ten times higher than its cost per user. As methods vary in their success rates, these two measures of unit cost are often considerably different and both are of interest to donors.

The effectiveness of each response can be assessed on three levels:

- (1) *Raw output*, eg, the number of condoms distributed by a safe sex project or the number of patients receiving antiretroviral drugs.
- (2) *Direct outcomes*, eg, the increase in condom use or the number of patients whose immune systems recover as a result of the drugs.
- (3) *Quantified impact*, eg, the number of HIV infections prevented, the years of life gained by patients, adjusted for quality, or the economic benefit to society.

The output (1) is by far the easiest of these to measure, and is therefore the level of assessment that charities most frequently quote, but is not very useful in making comparisons. Considerable information gathering is needed to measure the outcomes (2) reliably, but these figures are much more useful in assessing the effectiveness of measures and allocating resources. Comparable data on the impact (3) is the most useful measure of effectiveness and enables funders to make clearly informed choices between different kinds of measure. Unfortunately, complex calculations, involving assumptions on issues such as the epidemiological spread of HIV and the expected life span of a person without HIV, are needed to move from the direct outcome data to a good estimate of impact.

Ideally, good level (3) information would be available for all the different measures. It could then be compared to the cost of each measure to estimate cost-effectiveness. This would enable a comparison of the cost of funding one sort of intervention versus another. Where possible this section quotes level (3) cost-effectiveness data; although this data often comes from other African countries, their circumstances are sufficiently similar to Central Africa to be relevant. Unfortunately the information available is not as broad or reliable as one might hope.

Measuring outcomes is an activity fraught with problems. There are considerable difficulties both in defining success and in costing projects aimed at success. There is also the problem of longevity of success in projects trying to achieve long term societal changes, which are not measurable within a two-three year time scale. The actual data available is poor:⁹¹

- Costing methodology varies widely and may not be comparable
- Randomised control trials (RCTs) are scarce
- Some of the studies focus heavily on DALYs or QALYs.*

* DALYs = Disability adjusted life years; QALYs = Quality adjusted life years. The problem with using such measurements (how many years of a person's life do you buy) is that it misses many of the social

Nevertheless, grappling with these difficulties is a useful exercise, because some understanding of what constitutes success and the cost effectiveness of the initiatives is better than none. Because of the difficulties, the discussion that follows should not be regarded as conclusive, but is aimed at helping donors interested in directing funding to HIV/AIDS projects in Central Africa.

Cost analysis

Table 2 gives a summary of costs of the various initiatives. Quantitative statistics should not be read in isolation however, and the efficacy of the NGO providing the initiative (including characteristics such as local participation, capacity building, and social impact) should be considered in tandem.

Table 2: Interventions and outcomes⁹²

Intervention	Prevents infection	Improve or extend life	Protects children	Cost per user, US\$	Cost per pip, US\$
Prevention					
Education and awareness	✓	×	✓	16-32	–
VCT	✓	×	×	4-39	264-367
Social marketing condoms				negligible	24
Condoms/ STI treatment for sex workers	✓	×	×	6	19-30
Treatment of STIs	✓	×	×	2.50-16	11-260
PMTCT - Nevirapine	✓	×	×	4-8	27
PMTCT - HAART	✓	×	×	250	862
Blood security					52
Treatment and care					Cost over life
Antiretroviral drugs	?	✓✓	✓	1,000 pa	c10,000
Antiretroviral drugs – impact on children	×	×	✓	200 pa per child	2,000
Community based care	?	✓	✓	125-430 pa	–
Services to children					
Fostering	×	✓	✓	390	–
Education	×	✓	✓	71-480 pa	
Nutrition	×	✓	×	103 pa	–
Combined family support Rwanda - ie, four children	?	✓	✓	1,780 pa per family	445 per child

Table 2 includes estimates, where sufficient data are available, of the cost of each intervention per user and, when it is measurably different, the cost per successful intervention. These outcomes highlight difficult choices for donors in terms of resource allocation. Often the choice is between helping large numbers of people (eg, registration, palliative care) versus helping fewer numbers of people (eg, antiretroviral drugs – although with antiretroviral drugs there is a ripple effect upon the family) but in a more profound way. The choices are also influenced by what programmes are available, or feasible to develop in the immediate future, and how much money a grant-maker or donor is willing to spend.

nuances around who it is you are saving. For instance, by saving the life of a 30-year-old woman, you may achieve relatively few DALYs, but the effect on her children, which escapes the DALY calculation, is invaluable.

Donors can either help a large number of people in small but effective ways, or they can help smaller numbers of people and have a more profound effect on individual lives.

Conclusion

There is an urgent need for the developed world to take notice of the HIV pandemic as there are far reaching consequences of allowing it to continue unchecked. The challenge of addressing the epidemic is not only financial: there are logistical, social, and managerial hurdles which can inhibit responses to the problem. However there are opportunities for donors to help organisations that are attempting to overcome the challenges, not only by circumventing the hurdles but also addressing the hurdles themselves.

Section 3 gave a broad overview of the various outcomes generated by specific activities. In reality, however, the funding options available in some very poor regions may be different to those identified here and may not be neatly packaged, but this is a useful tool to refer to as an approximation of the results of resource allocation. Activities are usually more effective when conducted simultaneously.

NPC's additional reports *Out of the Shadows* (Burundi, Democratic Republic of Congo, Rwanda), and *Rhetoric to Action* (South Africa) provide greater details on the specifics of these countries and make some funding recommendations.

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Further reading

Barnett, Tony and Whiteside, Alan (2002) *AIDS in the Twenty-First Century – Disease and Globalisation*, Palgrave Macmillan

Baylies, Carolyn and Bujra, Janet (2000) *AIDS, Sexuality and Gender in Africa*, Routledge

Guest, Emma (2001) *Children of AIDS: Africa's Orphan Crisis*, Pluto Press

Campbell, Catherine (2003) *Letting Them Die – Why HIV/AIDS Prevention Programmes Fail*, the International African Institute

Footnotes

- ¹ Anne Buve, Institute of Tropical Medicine, Antwerp, email 20th October 2004
- ² UNAIDS website visited 10th August 2004
<http://www.unaids.org/NetTools/Misc/DocInfo.aspx?href=http%3A%2F%2Fqva%2Ddoc%2Dowl%2FWEBcontent%2FDocuments%2Fpub%2FTopics%2FEpidemiology%2FGlobalViewHIV%2D2003%5Fen%2Epdf>
- ³ Nicoli Nattrass, *Social Dynamics Vol 28 no 1 2002*, Centre for Social Science Research, University of Cape Town
- ⁴ Stephen Lewis, UN Secretary General's Special Envoy for HIV/AIDS in Africa, conference on HIV/AIDS and "next wave" countries Washington DC October 4th 2002
- ⁵ Leclerc Madlala (2002):
- ⁶ Leclerc Madlala (2002):
- ⁷ Dr Geeta Rao Gupta, President of the International Centre for Research on Women
- ⁸ UNAIDS: Global view of HIV infection 2003
- ⁹ CIA fact book 2004 <http://www.cia.gov/cia/publications/factbook/geos/ug.html>
- ¹⁰ "More Than 800,000 Ugandans Have Died of AIDS" Agence France Presse (www.afp.com) (10/05/00)
- ¹¹ Clodagh Warde, conversation 29th July 2004
- ¹² What happened in Uganda? Declining HIV Prevalence, Behavior Change and the National Response. Project Lessons Learned Case Study commissioned by USAID September 2002.
- ¹³ What happened in Uganda? Declining HIV Prevalence, Behavior Change and the National Response. Project Lessons Learned Case Study commissioned by USAID September 2002.
- ¹⁴ UNAIDS/WHO AIDS epidemic update December 2002
- ¹⁵ *New Vision* newspaper, Uganda, 23rd October 1987
- ¹⁶ Dr Brent Wolff – Medical Research Council Uganda conversation 2003: also
http://www.usaid.gov/our_work/global_health/aids/Countries/africa/uganda_report.pdf
- ¹⁷ Taking Action: UK's strategy for tackling HIV and AIDS in the developing world – page 18. Published by DfID 21/07/2004
- ¹⁸ UNAIDS: Report on the global AIDS epidemic: 4th global report, July 2004
- ¹⁹ UNAIDS: A joint response to HIV/AIDS 2004 <http://www.unaids.org/en/about+unaids/what+is+unaids.asp>
accessed August 11th 2004
- ²⁰ including funds handled on behalf of the Voluntary Fund for Health Promotion
- ²¹ Juan Pablo Gutierrez, Benjamin Johns et al Achieving the WHO/UNAIDS antiretroviral treatment 3 by 5 goal: what will it cost? *The Lancet* 2004; 364: 63064
- ²² Figures borrowed from ARK's budget for operations in South Africa (PEPFAR application) and rounded by NPC: US\$220 drugs; US\$110 lab testing; US\$110 patient advocacy; US\$110 medical supervision (NPC's estimate).
- ²³ Treating 3 million by 2005: Making it happen – the WHO strategy
- ²⁴ Global Fund: http://www.globalfundatm.org/faq_gfund.html
- ²⁵ Global Fund 7th Board Meeting, 18-19 March 2004, Report from Richard Feachem, Executive Director
- ²⁶ The Global Fund Progress Report 10th May 2004
- ²⁷ The White House, <http://www.whitehouse.gov/news/releases/2003/01/20030129-1.html>
- ²⁸ Wall Street Journal August 2004, as quoted by www.kaisernetwork.org accessed September 18th 2004
- ²⁹ Dr Yusuf Hamied, Chairman of Cipla, conversation August 2004
- ³⁰ http://www.usaid.gov/our_work/global_health/aids/ accessed September 18th 2004
- ³¹ 2004 report on the Global AIDS epidemic, UNAIDS, p138
- ³² 2004 report on the Global AIDS epidemic, UNAIDS, p138
- ³³ Gates Foundation website accessed 27 July 2004
<http://www.gatesfoundation.org/GlobalHealth/HIVAIDSTB/Grants/default.htm?showYear=2003>
- ³⁴ both company and foundation engage in philanthropy
- ³⁵ 2004 report on the Global AIDS epidemic, UNAIDS, p141
- ³⁶ "Sex and the Holy City" BBC Panorama broadcast 05/10/03
- ³⁷ Catholics for contraception: Catholics, conscience and condoms - A Catholic Response to Alleviating the AIDS Pandemic for the Special Session of the General Assembly on HIV/AIDS 25 - 27 June 2001
<http://www.catholicsforchoice.org/nobandwidth/English/contraception/condoms.htm> accessed 16/08/04
- ³⁸ Cafod: HIV Prevention, Condoms and Catholic Ethics
http://www.cafod.org.uk/policy_and_analysis/policy_papers/hivaids/hiv_prevention_condoms_and_catholic_ethics accessed 13/08/04
- ³⁹ The phrase "affected" is used to differentiate between people who are infected by HIV AIDS and those who are affected by the epidemic because family members are infected. People affected may also be infected, and vice versa.
- ⁴⁰ UNAIDS: *Mainstreaming HIV/AIDS: a conceptual framework and implementing principles* (Draft June 2002)
- ⁴¹ Pfeffer D, Nafissa O, Vaz P (2002), *PMTCT: Cost-benefit analysis of a program in Mozambique*.

- ⁴² Creese A, Floyd K, Alban A, Guinness L (2002) *Cost-effectiveness of HIV/AIDS interventions in Africa*, *The Lancet* 2002; 359: p1640. pip costs converted from \$ (2000) to £ (April 2003) using average FX rate of 1\$/£0.66 and inflation of 5.9% from June 2000 to April 2003
- ⁴³ 3 months antiretroviral therapy = US\$1,000x3/12 rounded up. Refer to cost analysis of outcomes: Table 2
- ⁴⁴ 250 ÷ 29% = US\$862; 29% = risk improvement from 30% risk of transmission to 1% risk of transmission if treated with HAART.
- ⁴⁵ 250 ÷ 29% = US\$862; 29% = risk improvement from 30% risk of transmission to 1% risk of transmission if treated with HAART.
- ⁴⁶ Soderlund N, Zwi A, Kinghorn A, Gray G. (1999), *Prevention of vertical transmission of HIV: analysis of cost effectiveness of options available in South Africa*, *BMJ* 1999; 318: 1650–56.
- ⁴⁷ Damian Walker: *Cost and cost-effectiveness of HIV/AIDS prevention strategies in developing countries: is there an evidence base?* Health policy and planning; 18(1) 4-17 OUP 2003
- ⁴⁸ International Herald Tribune (6/6/01)
- ⁴⁹ 20% of individuals reached through existing services; 50% usage in all sex acts; 60% efficacy
- ⁵⁰ Mobilization for Microbicides, the Decisive Decade, funded by the Rockefeller Foundation 2000 http://www.rockfound.org/Documents/488/rep1_summary.pdf accessed 05/08/04
- ⁵¹ IRIN Africa 7th September 2004 "Moving towards marketable microbicides".
- ⁵² AMREF HIV/AIDS study South Africa May 2002
- ⁵³ NPC has undertaken some probability calculations which are simplistic but have highlighted a number of mathematical results which reinforce the findings of Halperin and Epstein (see note below)
- ⁵⁴ Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania: Michael Sweat et al, *The Lancet* 08/07/2000 volume 356 no 9224
- ⁵⁵ Daniel T Halperin, Helen Epstein (2004) *Concurrent sexual partnerships help to explain Africa's high HVI prevalence: implications for prevention*. *The Lancet* Vol 364 July 3rd 2004. Halperin USAID
- ⁵⁶ Dr Geeta Rao Gupta, President of the International Centre for Research on Women, lecture February 2004
- ⁵⁷ Dr Geeta Rao Gupta, President of the International Centre for Research on Women, lecture February 2004
- ⁵⁸ Damian Walker, *Cost and cost-effectiveness of HIV/AIDS prevention strategies in developing countries: is there an evidence base?* Health policy and planning; 18(1): 4-17 OUP 2003. Damian Walker is at London School of Hygiene and Tropical Medicine
- ⁵⁹ AMREF – results from Mwanza
- ⁶⁰ DfID, MRC, LSHTM: Knowledge Programme on HIV/AIDS and STIs Briefing Note 2 2003/4
- ⁶¹ Donald Skinner (2001): *ibid*
- ⁶² Moses S, Plummer FA, Ngugi EN, Nagelkerke NJD, Anzala AO, Ndinya-Achola JO (1991), *Controlling HIV in Africa: effectiveness and cost of an intervention in a high-frequency STD transmitter core group*, *AIDS* 1991; 5: 407–11.
- ⁶³ Creese A et al (*Lancet* 2002) *Cost-effectiveness of HIV/AIDS interventions in Africa: a systematic review of the evidence*
- ⁶⁴ Michael Sweat et al (July 2000) *The Lancet*
- ⁶⁵ Michael Sweat et al (July 2000) *The Lancet*
- ⁶⁶ Sweat M, Gregorich S, Sangiwa G, et al. (2000), *Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania*, *The Lancet* 2000; 356: 113–21.
- ⁶⁷ LF Johnson and R Dorrington (2002): *Study in Cameroon 1998*
- ⁶⁸ Centre for Disease Control, <http://www.cdc.gov/>
- ⁶⁹ DfID and MRC Knowledge Programme on HIV/AIDS and STIs Briefing Note 1: What is the role of STD control in the prevention of HIV? Findings from the STDSIM simulation study.
- ⁷⁰ J. Vandepitte (1), F. Malele (2), D.M. Kivuvu (2), S. Edidi (3), J. Muwonga (3), F. Lepira (4), S. Abdellati (1), C. Van Overloop (2), A. Buvé (1) (2004) *Female Sex Workers attending a designated clinic in Kinshasa, DRC: Decline in prevalence of HIV and other Sexually Transmitted Infections between 1988 and 2002*.
(1) Institute of Tropical Medicine, STD/HIV Research & Intervention Unit, Antwerp, Belgium
(2) Médecins Sans Frontières Belgium
(3) Laboratoire National de Référence SIDA et IST (LNRS)
(4) Programme National de Lutte contre le SIDA et les IST (PNLS)
- ⁷¹ Gilson L, Mkanje R, Grosskurth H, et al. (1997), *Cost-effectiveness of improved treatment services for sexually transmitted diseases in preventing HIV-1 infection in Mwanza Region, Tanzania*, *The Lancet* 1997; 350: 1805–09.
- Hayes R, Wawer M (1997), *Randomised trials of STD treatment for HIV prevention*, *Genitourinary Medicine* 73(6): 432-43
- ⁷² Moses S, Plummer FA, Ngugi EN, Nagelkerke NJD, Anzala AO, Ndinya-Achola JO (1991), *Controlling HIV in Africa: effectiveness and cost of an intervention in a high-frequency STD transmitter core group*, *AIDS* 1991; 5: 407–11.
- ⁷³ Kaisernetwork daily, accessed 13/08/04
http://www.kaisernetwork.org/daily_reports/rep_index.cfm?hint=1&DR_ID=23059
- ⁷⁴ Plusnews September 23rd 2003

- ⁷⁵ MSF Campaign for access to essential medicines, briefing note, May 2004 "Access to medicines at risk across the globe: what to watch out for in free trade agreements with the US"
<http://www.accessmed-msf.org> accessed 04/08/2004
- ⁷⁶ Nathan Ford, Journal of Generic Medicines Vol 1 no 2 137-145 January 2004, "Patents, access to medicines and the role of non-government organisations". Nathan Ford works for MSF.
<http://www.accessmed-msf.org> accessed 04/08/2004
- ⁷⁷ - WTO News: 2003 Press Releases Press/350 30th August 2003 "Doha Development Agenda: Decision removes final patent obstacle to cheap drug imports"
www.sto.org/english/news_e/pres03_e/pr350_e.htm accessed 04/08/2004
- ⁷⁸ Juan Pablo Gutierrez, Benjamin Johns et al Achieving the WHO/UNAIDS antiretroviral treatment 3 by 5 goal: what will it cost? The Lancet 2004; 364: 63064
- ⁷⁹ Figures borrowed from ARK's budget for operations in South Africa (PEPFAR application) and rounded by NPC: US\$220 drugs; US\$110 lab testing; US\$110 patient advocacy; US\$110 medical supervision (NPC's estimate).
- ⁸⁰ NPC estimate. Brazil estimates that it saved \$1.1bn over 4 years and kept 358,000 patients out of hospital.
- ⁸¹ Sonja Giese – University of Cape Town 2003
- ⁸² Julia Cleve, UNAIDS, conversation July 2004
- ⁸³ Human Resources for Health: Requirements and Availability in the Context of Scaling-Up Priority Interventions – a case study from Tanzania. Kurowski, C et al. Commissioned by LSHTM and Ifakara Health Research and Development Center.
- ⁸⁴ Moatti JP: Ivory Coast study
- ⁸⁵ approximation using figures from ARK's budget for antiretroviral programme in South Africa. The cost will vary from country to country depending on who offers a laboratory testing service.
- ⁸⁶ Paul Roux freezing viral load samples – only defrosting for testing if required
- ⁸⁷ Dr Robert Book: Medical Officer for Naledi Hospice; Dr Paul Roux, Groote Schuur Hospital
- ⁸⁸ Dr Robert Book: Medical Officer for Naledi Hospice; Dr Paul Roux, Groote Schuur Hospital
- ⁸⁹ Visit to Pinetown Child Welfare, February 2003
- ⁹⁰ Sonja Giese, Children's Institute Cape Town
- ⁹¹ Damian Walker, *Cost and cost-effectiveness of HIV/AIDS prevention strategies in developing countries: is there an evidence base?* Health policy and planning; 18(1): 4-17 OUP 2003. Damian Walker is at London School of Hygiene and Tropical Medicine
- ⁹² **Source of figures in Table Section 5:**
- Education/awareness Student Partnership Worldwide / NPC estimates;
 - Voluntary counselling and testing: Michael Sweat et al (2000) (see above);
 - Condoms: cost/user from Peffer D (2002 "Prevention of mother to child transmission cost benefit analysis of a programme in Mozambique page 13)
 - Condoms: cost/success from Creese A, Floyd K, Alban A, Guinness L *Cost-effectiveness of HIV/AIDS interventions in Africa: a systematic review of the evidence* The Lancet vol 359 May 11 2002, 1991 figures so inflated up to 2003 by 4%
 - STIs: Damien Walker (see above)
 - The PMCTC cost per success calculations are as follows:
 - Nevirapine shot drug costs US\$4: Peffer D, Nafissa O, Vaz P (2002), *PMTCT: Cost-benefit analysis of a program in Mozambique*. In some places real cost of delivery may be higher.
 - Nevirapine: one shot per HIV positive mother reduces the risk of transmission from 30% to 15% (i.e. 15% improvement), $US\$4 \div 15\% = US\27
 - HAART: course per HIV positive mother reduces risk of transmission from 30% to 1% (i.e. 29% improvement), $US\$250 \div 29\% = US\862
 - Blood security: Yaounde in Cameroon, Damien Walker
 - ARVs: figures from Crusaid, Cost/success assumes 20% non adherence, resistance or drop out due to side effects over a 10-year period; Assume 10 years of treatment while children growing up
 - community based care NPC estimates from South Coast Hospice and Hensher study;
 - fostering NPC estimates from projects visited in South Africa;
 - registration, were it included, would be US\$108 based on NPC estimates from projects visited in South Africa. However, registration not crucial intervention in areas where there are no grant systems.
 - education NPC estimates from projects visited: : low end of scale = school fees and uniforms, upper end of scale = early education support;
 - nutrition = cost of Epat to adult or child per annum (R60 per month)
 - family support in Rwanda = Hope and Homes for Children budget 2004